THE IRON AGE

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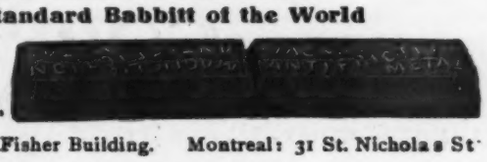

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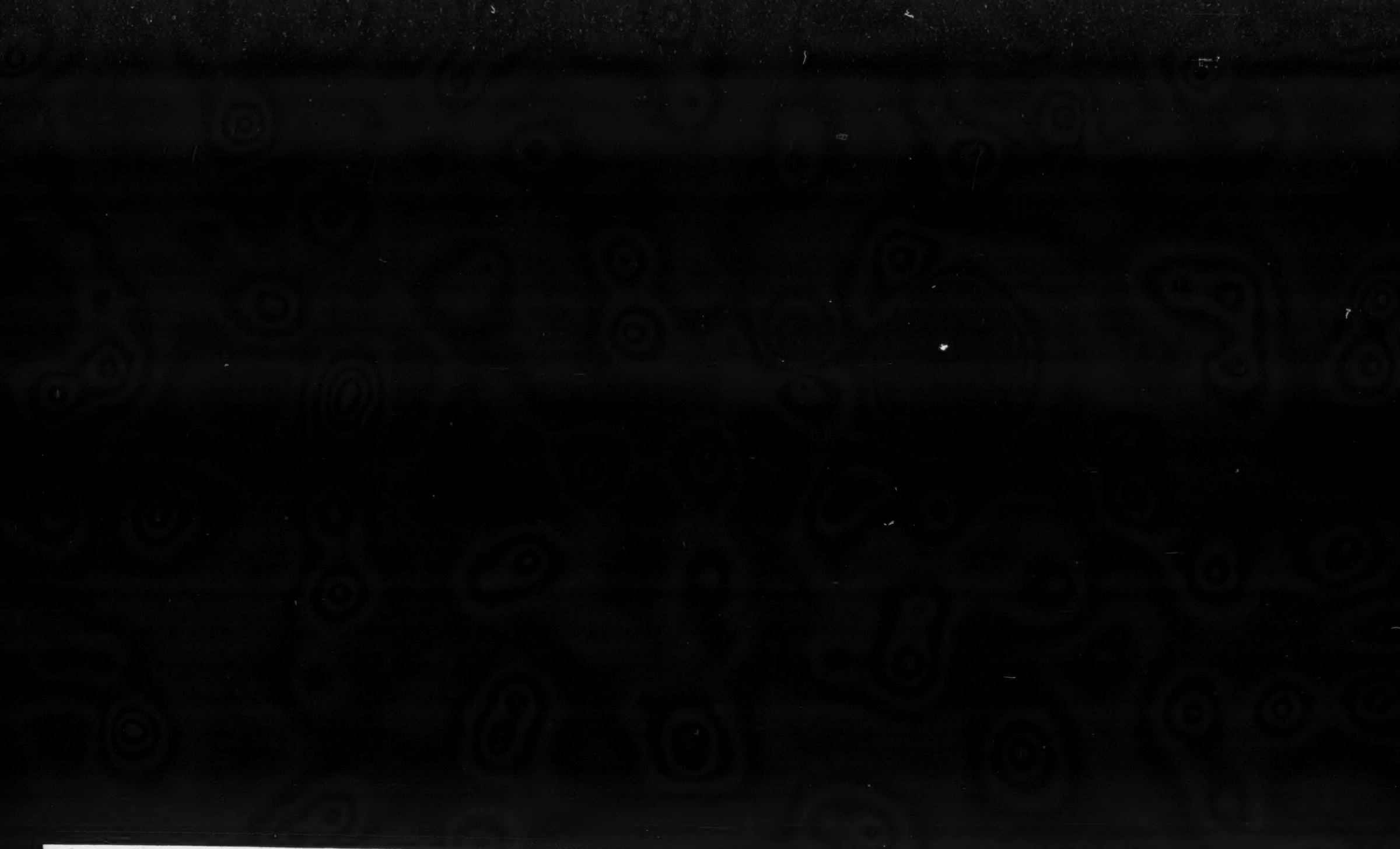


THE IRON AGE

New York, Thursday, February 13, 1908.

The Vanguard Gasoline Locomotive.

Following the successful operation of gasoline motors in railroad inspection cars of various types, it was natural to turn attention to the adaptation of this form of motive power to locomotives designed for special service in terminal switch yards of railroads, or for handling cars about industrial plants. A concrete example of development in this direction is furnished in the Vanguard locomotive built by the Milwaukee Locomotive Mfg. Company, North Milwaukee, Wis., and illustrated in Fig. 1 herewith. After a four months' test of continuous service in switching heavy freight cars singly and in trains over the indifferent tracks usually found in private yards with an 8-ton Vanguard locomotive the company is now prepared to furnish similar equipment for general work of like character. It is stated that in this test, which included electric railroad extension work of stringing trolley wires, the locomotive, though working at times 15 hr. a day, was not in the repair shop during the entire period. The chief advantages claimed for the machine are low operating expense, moderate cost of maintenance and freedom from smoke and sparks. It is always ready for service at a moment's notice, is operated by one man, consumes no fuel except when work is being done and all parts are interchangeable and accessible.

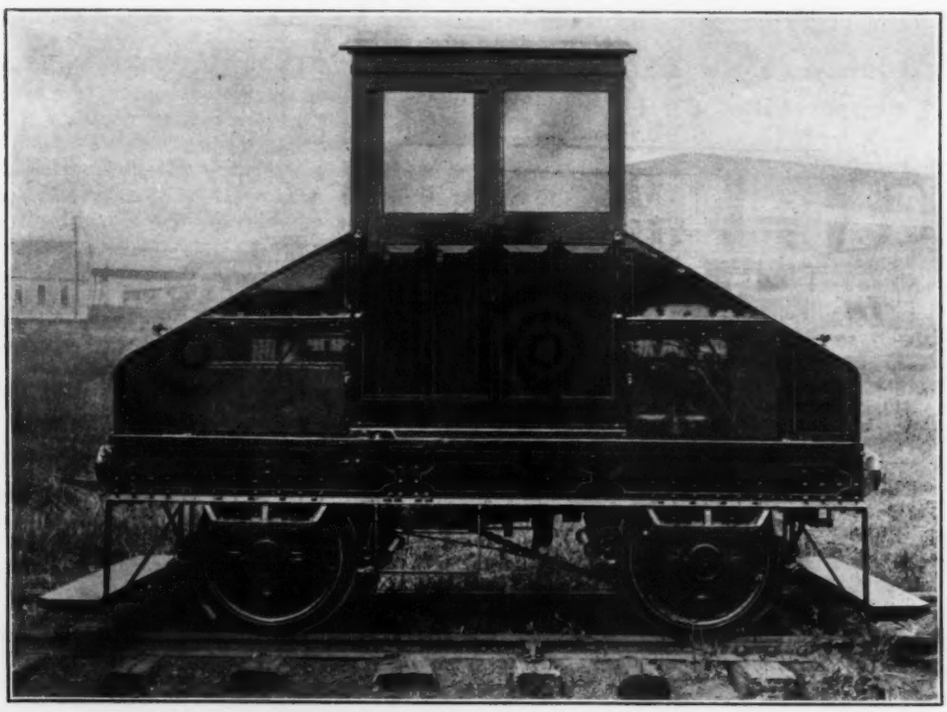


Fig. 1.—The Vanguard Gasoline Locomotive Built by the Milwaukee Locomotive Mfg. Company, North Milwaukee, Wis.

The motive power is furnished by a four-cylinder, four-cycle water cooled engine which, in the model A here illustrated, is of 50 hp.; engines up to 100 hp. are supplied when required. The engine and transmission gear are mounted on a frame suspended from three bearings on the main frame. This arrangement is designed to provide a degree of flexibility necessary to insure the mechanism against injury from sudden shocks incident to switching work or derailment accidents. A transverse leaf spring pivotally connected at its center to the front or left end of the inner frame, as shown in Fig. 2, forms one point of support for this member; the other two consist of trunion bearings on opposite sides of the main frame.

The engine is located at the forward end of the suspension frame and carries a flywheel with an extension hub socketed to receive the squared end of the main driving shaft. A coupling connection is thus provided that permits the shaft to slide forward and back enough to alternately engage and release the cup and cone friction clutches through which the forward and reverse motions are obtained. This movement is controlled by a reverse lever pivoted to the shaft, by which the clutch cones are alternately thrown in or out of gear. The friction cups are mounted on the opposite ends of a loose sleeve and have attached to their bases bevel pinions which mesh a bevel gear on the transverse chain shaft. On this shaft are two sprocket wheels carrying Whitney roller chains, one leading to the front and the other to the rear axle. The chain shaft, being nearly in line with the trunion bearings of the intermediate frame, preserves the tension of the transmission chains, notwithstanding the vibration imparted to the frame by unavoidable jars and jolts.

Axle bearing boxes of special design are bolted to brackets attached to the side bars of the main frame, and contain bearings of bronze and antifriction metal which are made transversely oval to adjust the axle alignment to uneven track. The bearing is held from rotating in its box by a pin extending through the upper bearing section of the box into the lower bearing, and a slotted opening is provided in the latter to compensate for the rocking movement of the axle.

The locomotive is geared for three speed changes on both reverse and forward motion, 2, 8 and 15 miles, respectively. Steel tired cast iron wheels are used, and hand lever brakes are provided for all four wheels, the arrangement of which is clearly shown in Fig. 2. The gears are of forged steel cut and case hardened, and the car has a wheel base of 7 ft. and is equipped with M. C. B. automatic couplers.

The company is at present engaged in building a locomotive of similar type suitable for passenger and freight traffic on spur lines. This machine is designed to haul a heavy passenger coach at a speed of 30 miles an hour or to handle a train of 10 loaded freight cars. In the opinion of the designers this type of locomotive is preferable to and more effective than an equivalent installation of motive power in a passenger coach. Such equipment can, however, be furnished if desired. The passenger motor

now under construction will be furnished with air brakes and a small electric generator.

The Canadian Bounties on Lead.

The Dominion statute under which bounties are paid on lead will expire June 13. Representatives of the Associated Boards of Trade of British Columbia have already been in Ottawa urging that the bounty law shall be continued for another period of five years, and that the new act shall be so framed as to admit of the payment of bounties until the price of pig lead in the London market reaches £18 a ton of 2240 lb.

Bounties on lead have been paid since 1899. Up to the end of the fiscal year 1906 the total disbursements to the lead miners of British Columbia were $770,848. These payments were made under three different enactments, and it was not until the act of 1903 that there was any connection between the bounties and the price of lead in London.

The second of the bounty acts, that of 1901, provided for tonnage bounties on a sliding scale. The rate for 1902 was to be $5 a ton; 1903, $4; 1904, $3; 1905, $2, and 1906, $1, but, as has frequently happened in connection with bounty enactments of Canada, the act of 1901 did not run out its time limit, which was fixed for June, 1907. The act of 1901 was repealed in 1903, and replaced by an act which provided that the bounty should be at the rate of 75 cents per 100 lb., and that in no year should the total payments exceed $500,000. There was, moreover, inserted in this act a clause which provided that when the standard price of lead in London exceeded £12 10s. per ton the bounty on lead should be reduced by the amount of such excess. The result of this provision was that there were no bounty payments during the fiscal year 1907, when 47,508,471 lb. of lead was produced in Canada.

The lead miners now regard this provision as a hardship on the industry, and the Nelson Board of Trade has passed a resolution, which has since been adopted by other British Columbia Boards of Trade, urging that bounties shall be paid until the price of lead in the London market is at £18 a ton. The ground for this change in the bounty law is that when the act of 1903 was passed machinery, supplies and labor cost less than they do at the present time, and that in 1903 there was a market for zinc in the United States. Under present conditions it is argued there is no market in the United States for this by-product of the lead mines, and for mines where the silver percentage is low the whole of the profit must come from lead. It is claimed also there is no profit in lead when the London price is below £18, and that even with lead at £18 Canadians get less for their lead than American producers under the Dingley tariff.

During the eight years in which these bounties have been paid 135 mines have participated in them. In 1906, when the total payments aggregated $90,196, the two largest payments were $46,512 and $25,792. These were to the St. Eugene mine and the Sullivan mine. The St. Eugene mine was paid in respect of 15,599,350 lb. of smelted lead and 4,391,137 lb. of unsmelted. The payments to the Sullivan mine were for 5,908,409 lb. of smelted lead and 3,839,542 lb. of unsmelted. Only 11 of the payments to mines exceeded $900, and in some cases the payments were less than $5. In the year in which the act of 1903 went into operation the total payments increased from $4380 in 1903, the last year in which the act of 1901 was in force, to $195,627. The following year the amount reached $330,645, the largest sum ever paid out in respect of lead bounties. The upward movement in the price of lead, however, soon began to affect the payments, which in 1906 fell to $90,000, while in 1907 there were no payments of bounties in respect of lead.

The Canadian Government has been paying bounties for a variety of industrial products from as far back as 1883. No bounty law is ever for a longer period than five years, but nearly every bounty law that has been on the Dominion statute book has been renewed by Parliament when the term of enactment expired. With a Dominion general election due in the autumn of this year there is every likelihood that the Government will respond to the pressure of the mining interests of British Columbia, and continue the lead bounties for another five years.

E. P.

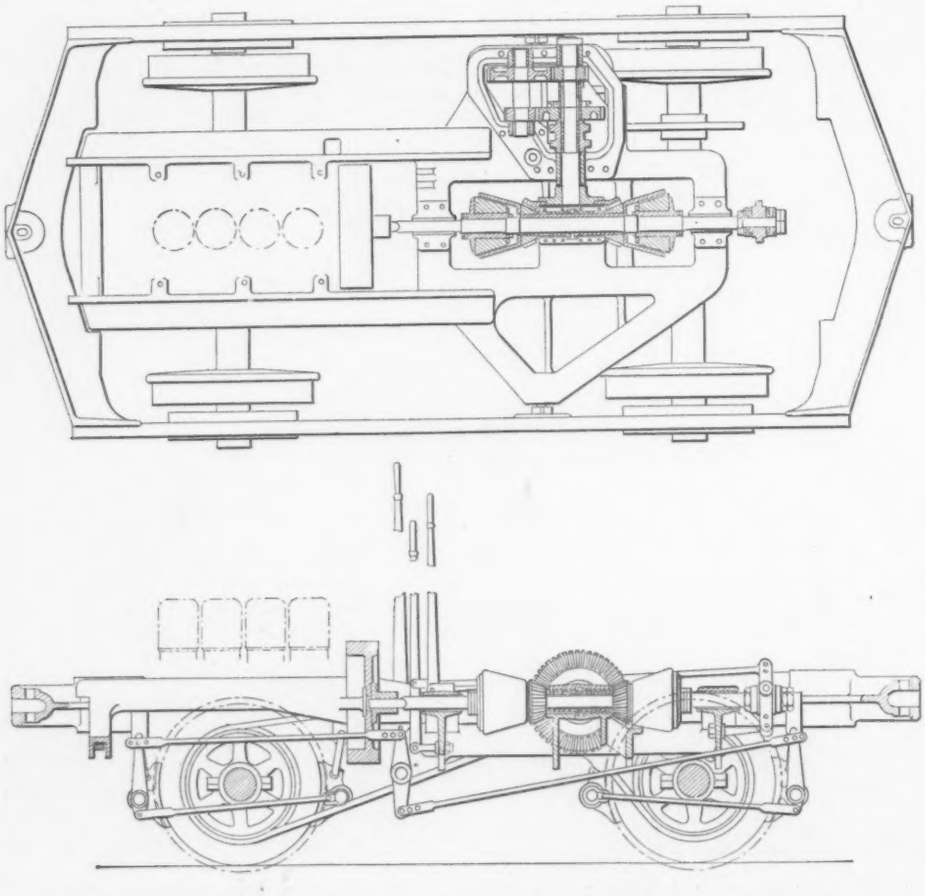


Fig. 2.—Plan and Elevation of the Truck of the Vanguard Gasoline Locomotive.

The Westinghouse Improved Post Brake.

An improved brake, specially designed for motors in rolling mill service, is a recent product of the Westinghouse Electric & Mfg. Company, Pittsburgh, Pa. This, designated as the Westinghouse post brake type S. P., is of the solenoid post type, and is described as simple in construction, liberal in design and effective in operation. As shown in Fig. 1, its principal members are a brake wheel A, and two friction shoes B, which are mounted within a structural frame C supported by a steel base G, being controlled by a heavy steel spring O, and a solenoid in a cast steel frame F, which completely incloses the coil. The brake is built entirely of cast iron and steel. Cast iron is used in the wheel and shoes, where its better wearing qualities and cheapness of renewal make it preferable. The shoes and wheel are operated prefectly dry, and cast iron is found also to be the best for metallic surfaces unlubricated. The wear on the wheel is about one-sixteenth of that of the shoe. The maintenance cost is low, and all repair parts are easily made in any repair shop. The open construction permits easy inspection of all parts.

The shoes are clamped to the wheel during the braking period by the steel spring, and are released by the solenoid. The connecting rod H of the latter carries adjustable stop nuts K, which contact with the pin P, and, acting against the compression member D, place the member E in tension, pulling the brake shoes away from the wheel. The full force of the brake is applied at the moment of contact between the shoes and the wheel, and as soon as contact is made the spring ceases to contract. Therefore the braking force never exceeds normal, and the stress on the brake parts and motor shaft is much less than is the case with ordinary brakes. Likewise, the load is stopped in a much shorter time. To do away with the hammer blow effect experienced in other types of brakes, the plunger is provided with lost motion to permit of overtravel. There is practically nothing in connection with the brake to get out of order, and the only attention needed is an occasional adjustment of the screw J to take up the play due to the wear of the shoes or of the screw I to regulate the clearance. All parts needing adjustment are easily accessible. No lubrication of either shoes or wheel is required.

In the design of the brake special attention has been

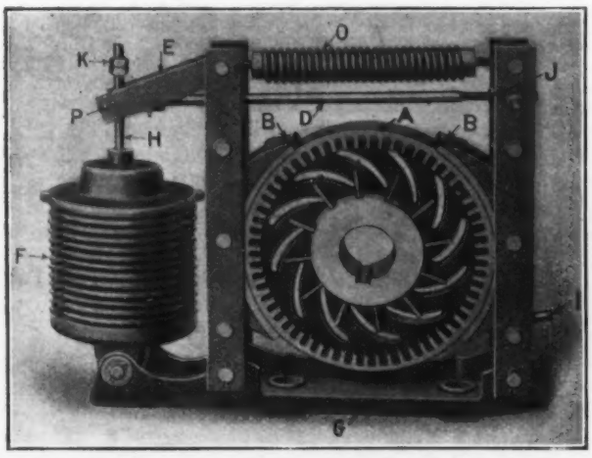


Fig. 1.—The Westinghouse Type S. P. Post Brake for Motors in Rolling Mill Service.

paid to heating tendencies, and ample provision made to counteract their effect. The rim of the wheel is corrugated on the under side for the double purpose of increasing its strength and giving the maximum radiating surface. The arms are numerous and curved to permit an expansion of the rim due to heating, without producing undue stresses in the arms or rim. On each side of the arms and extending from the hub are vanes, which produce a current of air directed against the corrugations inside the rim while the wheel is running. This increases the radiation of heat generated and keeps the heat away from the motor bearing.

The shoes are of cast iron with a solid thick face to permit long wear. On the rear of the shoe is a series of narrow ribs, which strengthen it and increase the radiating surface. In operation the shoe is free to turn on a pivot and find a true seat on the wheel. The pressure against the wheel is thus uniformly distributed and unusual wear in any one part of the shoe is prevented.

The magnet is of cast steel, the frame completely inclosing the coil. It is pivoted at the base which prevents any tendency to bind as it follows the wear of the shoe. The coil may be either series or shunt wound for a direct

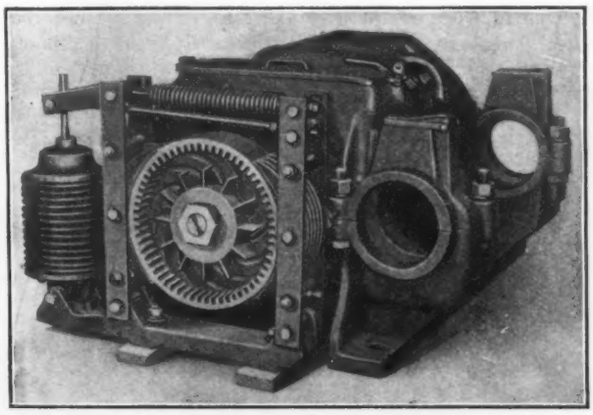


Fig. 2.—The Type S. P. Brake Attached to a Westinghouse Mill Motor.

current circuit of 110, 220 or 500 volts. The series winding is preferable to the shunt due to its quicker action, and is considered as standard. The series coils will release the brake at 0.6 of the full load current of the motor, and will hold it open at 0.1 full load current.

The brake is secured to the motor by brackets, as in Fig. 2, which may be made integral with the motor frame when so specified. This arrangement is strongly recommended as it precludes all possibility of the brake getting out of alignment. These brakes are at present made in five sizes for 25, 50, 75, 100 and 150 hp. motors, and may be applied to any type of motor used in mill or crane service.

The Malleable Castings Industry.

The production of malleable iron castings in the United States in 1907, as ascertained by the *Foundry*, amounted to 969,399 tons. No similar statistics have been gathered in other years. It is estimated, however, that the producing capacity is now about 1,300,000 tons a year, as against 875,000 tons in 1903—an increase of about 50 per cent. The net increase in the number of malleable foundries since 1903 is found to be 15, the number of new plants being 17, and of abandoned plants 2. The statistics just gathered show that 13 new plants have been put in operation since July 1, 1906. At present there are 131 malleable foundries in the United States. Ohio and Illinois lead with 21 each; New York and Pennsylvania have 16 each; Wisconsin has 12, Connecticut 11, Michigan 8, Indiana 6, New Jersey 4, Massachusetts 3, Missouri 2 and Alabama, Delaware, Iowa, Kentucky, Maryland, Minnesota, New Hampshire, Rhode Island, Tennessee, Washington and West Virginia 1 each. The number of air furnaces in use at malleable foundries is 369, and of open hearth furnaces 21. In addition 42 cupolas are used for melting iron entering into malleable castings.

The H. W. Johns-Manville Company, in accordance with its usual custom, held a convention of its branch managers in New York, from January 29 to February 1. The managers of the various branches of the company throughout the United States were present at the meeting, and a general discussion of its business affairs took place. As a fitting wind up of the convention a banquet was given to the managers at the Union League Club on the evening of January 31. The convention was pronounced a decided success by all present.

The Logemann Hydraulic Wheel Press.

Owing to the variations in size of shafts and bores of cast iron wheels used in the construction of mowers and reapers, there is an ever present liability of breaking the wheels in pressing them on, unless the pressure is under perfect control and can be graduated to meet changing degrees of resistance. The hydraulic press illustrated in Fig. 1 was designed and constructed by Logemann Brothers, Milwaukee, Wis., especially for such work and has been installed in a large mower and reaper plant, where it is handling up to 800 wheels per day.

Due to worn reamers or hard spots in castings, the wheel bores are sometimes a trifle small or the shafts on which they are to be pressed are not infrequently either slightly oversize or not of uniform diameter; thus when a tight fit is encountered added pressure is required to force the wheel on. This might be necessary only for an inch or so of plunger travel, after which the fit becoming normal a lower pressure suffices. If, however, the mechanism is driven by an unregulated force a quick decrease of resistance would result in driving the wheel forward with such speed as to render a break in the main mower frame casting extremely likely. To obviate this difficulty the triple compound pressure pump, which operates this press is arranged to automatically respond to the requirements of service at either high or low pressure. Being delicately adjusted and under automatic control sudden and severe stresses likely to result in breakage are prevented.

The pump unit, as shown in Fig. 2, comprises three high and three low pressure cylinders set tandem on a low cast iron base, the plungers of which are driven from three cranks, 120 degrees apart, on the driving shaft. The mechanism by which automatic control is effected consists of a special ram ⅝ in. in diameter in direct connection with the discharge part of the low pressure cylinders. When the pressure is raised to a given point it depresses a short fulcrum lever attached to the ram, which in turn unseats the suction valve in each of the low pressure cylinders. Suction being thus cut off in them the entire load is transferred to the high pressure end, which increases the power but decreases the travel speed of the main press ram. As soon as the resistance is relaxed and the full measure of power thus exerted is no longer required the ram is forced upward by a counterweight, thereby reseating the valves. Suction being thus restored in the low pressure cylinders the load is again thrown on the entire pump. By proper adjustment of the counterweight the automatic relief valve can be set to operate at any pressure desired up to the maximum capacity, which with the high pressure plungers operating detached can, it is claimed, safely reach 2000 lb.

In pressing on wheels of the kind and under circumstances above referred to the pump is generally run with the six plungers in action, but when a tight shaft is encountered the problem of dealing with it is effectually solved by the arrangement described. The same mechanism may be adapted to other kinds of press work with equally good results.

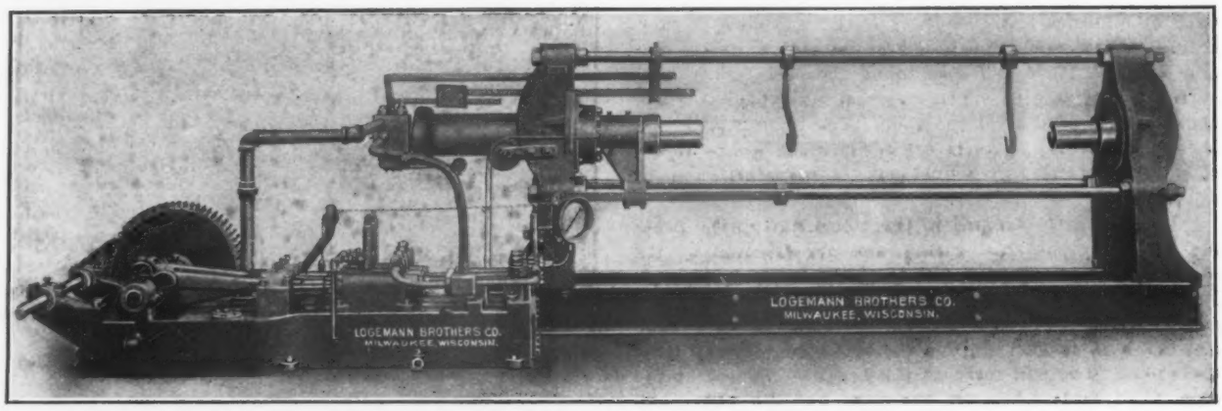


Fig. 1.—The Logemann Hydraulic Wheel Press with Self-Contained Operating Pump.

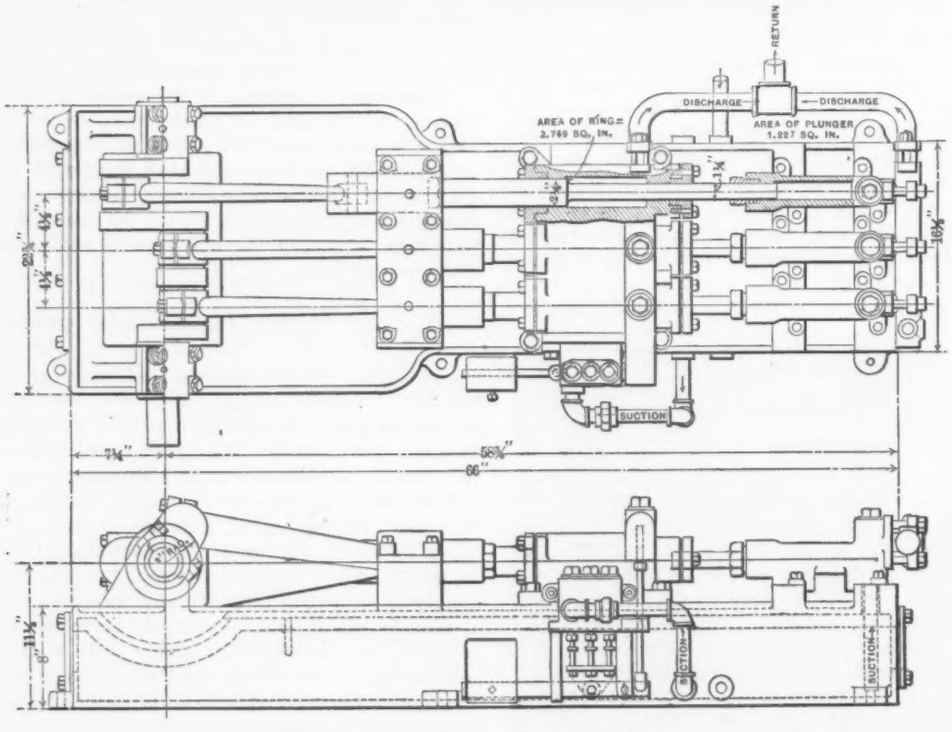


Fig. 2.—Details of the Triplex Pump Unit.

Tariff Revision Far in the Future.

WASHINGTON, D. C., February 11, 1908.—The outlook concerning the revision of the tariff has materially clarified in the past few days, and certain propositions can now be stated with a fair degree of positiveness. Recent developments warrant the following statements:

1. None of the rates of the present tariff will be changed at this session of Congress.
2. The initial steps looking to a comprehensive overhauling of the Dingley law will be taken at the short session next winter, with the ultimate object of framing maximum and minimum schedules.
3. Congress will not authorize a tariff commission to cooperate in the work of revising the Dingley act.
4. The customs administrative laws will not be amended at this session and probably not in advance of the coming general revision of the tariff.

More than a score of bills proposing various changes in the existing tariff schedules have been introduced during the present session and are now before the Ways and Means Committee. They will not be acted upon at this session, however, and it is now regarded as improbable that this committee will even make a favorable report upon the bill reducing the duties on Philippine products which passed the House in the last Congress, only to be smothered by the Senate Committee on the Philippines.

Revision Planned for 1909.

The statement that Congress next winter will lay the foundation for the comprehensive revision of the tariff is based upon authoritative declarations made the past week by Speaker Cannon and by Chairman Payne of the Ways and Means Committee. The Speaker for some time past has advised his intimate friends and political lieutenants that in his opinion the tariff would be revised by the next Congress, and this statement was repeated at a hearing given a few days ago to a delegation representing the National Association of Manufacturers, the National Grange and other organizations, who came to Washington to urge the so called Beveridge tariff commission bill. At the same hearing Mr. Payne made a more definite and specific statement than the Speaker concerning the work to be done next winter. In this connection Mr. Payne said:

I think the signs of the times are that next winter this Congress will undertake a revision of the tariff. Shall we get our working information at first hand from the producers themselves, or shall we content ourselves with getting it second-hand from a body of men appointed as a tariff investgation commission? From what I have seen of the formation of tariff bills—and I have been 18 years a member of the Ways and Means Committee, and for the last nine years its chairman—I should by all means seek it at first hand.

Subsequently, in a speech on the floor of the House, Mr. Payne gave it as his opinion that Congress next winter would start the machinery in motion for the revision of the Dingley act, but was careful not to state that a new tariff law would be passed before the end of the present Congress. The present plans of the Congressional leaders involve the passage of a joint resolution at the short session next winter authorizing the Ways and Means and Finance committees to sit during the Congressional recess beginning on March 4, 1909, for the purpose of gathering data to be used as the basis for a new tariff.

Maximum and Minimum Schedules.

The prospect that the next tariff act will be framed in accordance with the maximum and minimum principle which underlies the tariffs of the leading European counties is decidedly interesting. Its exact significance, however, will be misunderstood unless the specific plans of the leaders now advocating it are kept in mind. During the recent discussion of the Beveridge Tariff Commission bill, Speaker Cannon put this question to the delegation:

Do I understand that you favor on the part of the United States an even tariff with every other country in the world, except that we shall enforce our maximum tariff against such countries as discriminate against our exports—that you favor a minimum and maximum tariff, with that application?

Certain members of the delegation answered the Speaker's question in the affirmative, whereupon he declared that "that is precisely the kind of a tariff I believe in myself." Chairman Payne of the Ways and Means Committee subsequently described his own attitude with regard to maximum and minimum schedules as follows:

My position is that when it shall be best for the interests of the American people to undertake a revision of the tariff, that is the time when I shall favor a revision, and I should urge a minimum and maximum tariff, coupled with the existing law empowering the United States to make trade agreements with other countries; and I would follow France, Germany and Russia in the provision that the minimum tariff should afford a fair protection to home products.

The decision of the Congressional leaders not to appoint a tariff commission to aid in the revision of the Dingley act was a foregone conclusion, notwithstanding the strong effort made by advocates of the project to secure its favorable consideration. The Ways and Means Committee refused to give a hearing on the plan, and the conference subsequently arranged with Speaker Cannon and Chairman Payne by the promoters of the Beveridge bill was intended merely as a personal courtesy to the delegates who attended it.

The Senate Finance Committee has decided not to undertake the amendments of the customs administrative laws at the present session, and has been moved to its decision partly by the opposition that has developed to the amendment of section 7 of the act of June 10, 1890, as recommended by the Secretary of State, in pursuance of the recently concluded reciprocal trade arrangement with Germany. The President a few days ago transmitted this agreement to the Senate, together with the text of the proposed changes in section 7, and, after an animated discussion in executive session, the papers were all referred to the Finance Committee. As the favorable action by Congress upon the recommendations of the Secretary of State is not a condition of the maintenance of the German-American agreement, the failure of the Finance Committee to take up the customs administrative act is not regarded as of great importance, especially as it has been intimated by the Senate leaders that the administrative statutes will be very carefully revised in connection with the overhauling of the tariff schedules.

Whether the House will take action at this session with respect to the customs administrative laws has not yet been decided. As heretofore stated in this correspondence, the Ways and Means Committee had intended to take up the question immediately after disposing of the Philippine tariff bill, but the delay in the consideration of that measure and the present uncertainty as to whether it will come up at all have disarranged the committee's plans. Chairman Payne a few days ago introduced a very comprehensive bill for the amendment of the act of June 10, 1890. Whether this subject is taken up at this time or at some later date, this measure will no doubt serve as the basis for the proposed revision.

W. L. C.

The International Adding Machine Company, Cleveland, has been organized with a capitalization of $50,000 as a preliminary to the formation of a $1,000,000 corporation, which, it is announced, will incorporate later to erect a plant for the manufacture of an adding machine upon which the company controls patents. The principal promoters of the company are N. I. Dryfoos, president of the National Woolen Company, Cleveland, and S. B. Newman of the Calculus Company, Cleveland. The company has not yet selected a location for its plant. It is announced that a plant costing from $200,000 to $300,000 will be erected, and that about $100,000 worth of machinery equipment will be required.

The January production of the Northern Iron Company's furnace at Port Henry, N. Y., averaged over 196 tons daily, which is the largest yield in the history of the plant. The entire output was sold, together with about 700 tons of additional pig iron on hand. The company has a stock of between 7000 and 8000 tons of pig iron on hand.

The Oil Well Supply Company, Oswego, N. Y., is to increase the capacity of its power plant by the erection of a new power house and the installation of a modern water wheel of 400 hp., moving into the new building its Corliss engine to be used as an auxiliary at low water.

An Interesting Coal Handling Plant.

BY CHARLES M. RIPLEY, NEW YORK.

The J. M. Gilchrist's Sons Company, Allegheny, Pa., is just completing an improved coal handling, screening and storage plant on the bank of the Allegheny River in Pittsburgh. The coal barges are towed from the Monongahela bituminous district, coal being brought from mines of both the thick and thin veins, and distances of from 10 to 45 miles away from Pittsburgh. It is not generally understood that Pittsburgh is favored with such great coal deposits so near by, but this and the cheapness of river transportation have added greatly to the industrial prosperity of the Pittsburgh District. In this connection it is interesting to note the very low expense of coal handling in this neighborhood. Coal in considerable amounts can be transported 2000 miles to New Orleans, via the Ohio and the Mississippi rivers, at the same expense that will be required to ship the same amount by rail to Cleveland, Ohio, a distance of less than 150 miles.

The equipment for the plant under discussion operates as follows: A two-yard Hayward class E clam shell bucket is used to take the coal from the flats or barges and dumps it into a hopper 70 ft. above the river bed. From this hopper it is diverted either to the right or to the left by a swinging apron, according to its quality. From the apron the coal passes down one or the other inclined screen, each of which has two different sizes of mesh. These two screens are arranged in the shape of a letter A, and the coal is discharged just to the right or left of the apex, according to its quality. The tailings fall at once through the screen into the middle bin, while the nut size does not fall through until the next larger screen is reached further down the decline. The lump size will find its way to the farthest bin, falling over the lower edge of the screen, there being no mesh through which it passes.

The equipment is duplicated on either side as far as storage facilities are concerned, with the exception that the bin for the nut size is omitted on one side. Thus it is seen that this plant unloads, dumps, divides into two qualities, and further divides one of these qualities into two sizes, and the other quality into three sizes, all in one operation. Gates are arranged at such frequent intervals that six or seven wagons can be filled at the same time.

The Carlin Machinery & Supply Company, Allegheny, Pa., were kind enough to furnish the following information in regard to the mechanical equipment of this plant. A 50-hp. 10½ x 12 in. double cylinder triple drum, Lambert hoisting engine is installed on an elevated platform 33 ft. above the average level of the river. This platform is erected on 20 piles, between 12 and 15 in. in diameter, and driven to hard pan. Concrete was placed around all the piles at the bottom up to a hight of 2 ft. above the water to add greater stiffness.

A three-drum engine was used so that one drum could be used for changing the reach of the boom, one for raising the clam shell bucket, and one for opening and closing the bucket. An interesting feature of this type of Lambert engine is that the closing drum of the engine has the foot brake placed on the end opposite to that at which the friction clutch is applied. The clutch creates some heat, and if the brake were on the same end the increased heat of the tube would cause considerable trouble, owing to the drums cracking from unequal expansion. This trouble has been entirely overcome, as the amount of frictional heat generated on either end is practically balanced.

A 7-hp. single cylinder Dake double geared reversible engine is used for slinging the derrick through an angle of 180 degrees over a circle whose diameter is practically 120 ft. Thus the coal is swung from the barge in the river to the hopper on the shore. The operating cable is a ¾-in. Leschen flattened strand wire rope made of crucible steel. It is so constructed that a great number of wires in each strand are at all times exposed for wear, and presents in external appearance a smooth or comparatively smooth surface even while new. Thus from the start the wear is light upon any one individual wire, since it is distributed over six or seven wires in each strand, instead of being borne by the one outside wire as in the older types of steel rope. It is claimed that the slightly greater cost of this type of rope will be offset by the replacements being less frequently necessary than with the ordinary type of rope.

An unusual obstacle encountered in designing this plant was the restricted harbor line, which allowed a space of only 15 x 30 ft. for the foundations of the hoisting engine and derrick. Obviously, in a space of this size it is impossible to locate all the stiff legs of the derrick. Fig. 1 herewith shows the ingenuity displayed by anchoring one stiff leg on the same platform with the engine, and the other two on the structure containing the storage bins on the river bank. Thus it happens that one of these stiff legs must be a tension member as the coal is being lifted from the barge, and later a compression member as the 2-yard bucket is swung into position over the hopper.

As the engineer stands by his operating levers he has full view of the barge and the hopper during the complete

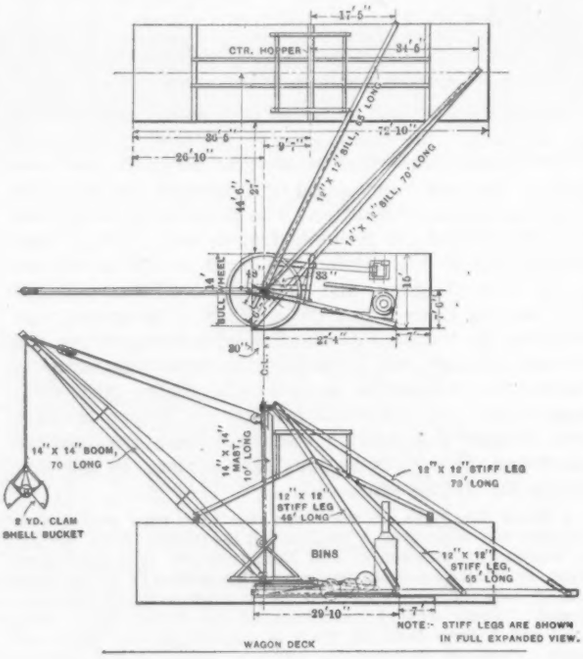


Fig. 1.—The Derrick Hoist for Raising the Coal from the Barges.

cycle of operations. All of the levers are brought to the quadrant stand and some of them can be operated either by foot or by hand, thus increasing the ease of operation. This is important since it is expected that this plant will be operated almost continuously, and handle about 12,000 bushels of coal per day. The expense for this work, aside from the fuel of the hoisting engine, is as follows: One engineer, $3; two men in the flat or barge, $2 each, and one fireman $1 per day. Thus with this total labor expense of $8 per day the cost of hoisting 70 ft., classifying into two different qualities and five different sizes is only 66 cents per 1000 bushels.

The boom of the derrick is 70 ft. long, and owing to the large size of the clam shell bucket the mast is made 16 x 16 in. Where the gudgeon pin is attached to the mast a steel channel is let in the front of the mast timber, and the channel is further strengthened by ¾-in. steel plate inserted between the channel and the timber to prevent the crushing of the wood. At the foot of the mast the derrick base casting is unusually heavy and is in two parts. That for receiving the mast permits all ropes to pass through it, and between the mast and the boom, so that no sheave mortices are required in the mast, and the number of sheaves is thereby lessened. The knee or boom seat is bolted to the derrick base, which allows the boom to be taken down without disturbing the mast. The derrick base has a bearing 11 in. in diameter, with a

6-in. diameter opening for the three cables, so that there is no possibility of the cables touching the sides and wearing themselves unnecessarily.

The diameter of the drum is such that it takes more than one revolution for the link chain to close the bucket. After one turn of the two stranded link chain, it is then converted to a single strand, and the single strand coils between the two laps of the double strand. Thus the drum remains the same diameter, but takes the necessary amount of chain without losing power.

The engine was placed 33 ft. above the river, to provide against damage from a flood such as occurred last year. But this hight is not too great for practical use, because the catheads on the hoisting engine are used to shift the position of the 4400-bus. barges to and from their unloading position in the river.

The details of the coal storage plant are shown in Fig. 2, together with the hopper, the diverting damper, or apron, and the two screens arranged in the shape of an A. This storage plant is at such a hight that teams can drive up to the coal chutes and can be loaded from above, while

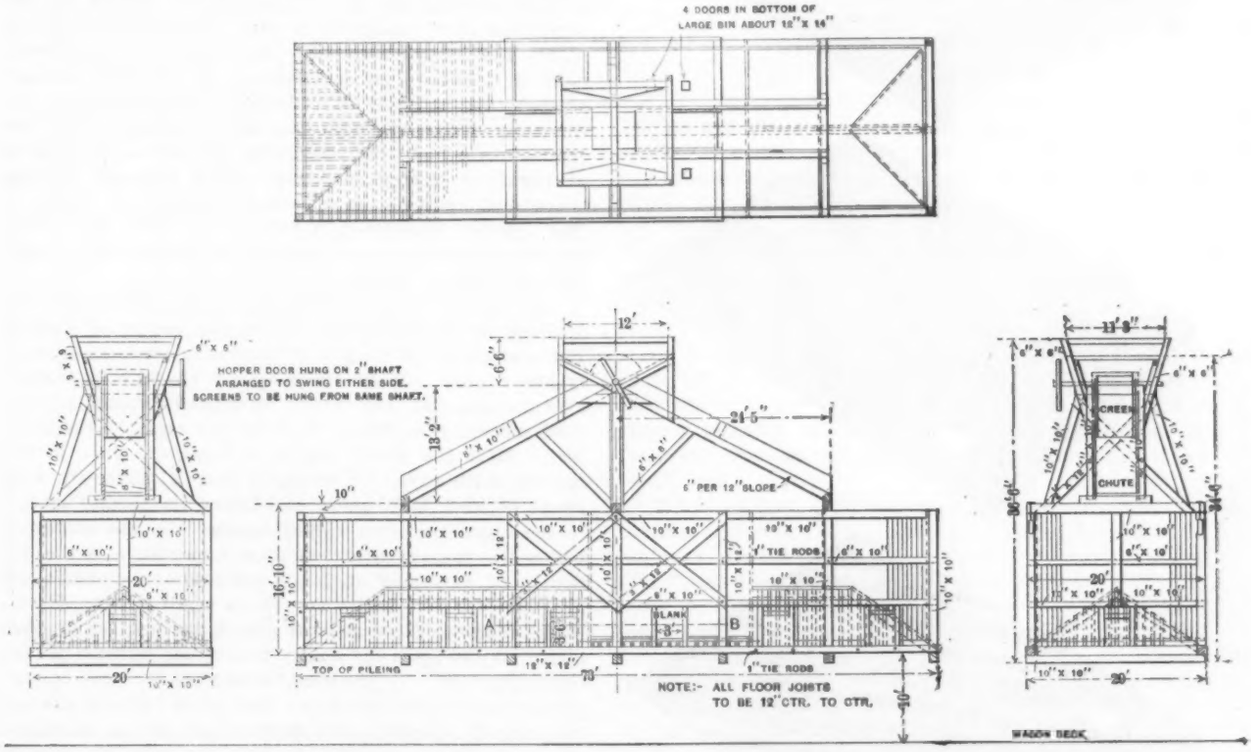

4 DOORS IN BOTTOM OF LARGE BIN ABOUT 12"X 16"
HOPPER DOOR HUNG ON 2" SHAFT ARRANGED TO SWING EITHER SIDE. SCREENS TO BE HUNG FROM SAME SHAFT.
6" PER 12" SLOPE
1" TIE RODS
SLANT
TOP OF PILEING
NOTE:- ALL FLOOR JOISTS TO BE 12" CTR. TO CTR.
SCREEN
CHUTE
WAGON DECK

Fig. 2.—Plan and End and Side Elevations of the Coal Storage, Showing the Screening and Sorting Provisions.

they themselves are on the street level. Heretofore a team of horses, with the extra assistance of a hoisting engine, were needed to haul each wagon on a long incline roadway 33 ft. up the river bank to the street level. The old 400-ft. float, wide enough for two teams abreast (part of the old coal handling system), involved constant repairs, incessant pumping, and the heavy rental demanded by the city of Allegheny. All these objections and expenses are done away with by this new installation.

New Publications.

Electrocraft.—Illustrated List of Approved Electrical Fittings and Revised National Electrical Code. Size, 5¼ x 7½ in.; pages, 389. Compiled and published by Electrocraft Publishing Company, Detroit, Mich. Price, 50 cents.

This is the second edition of the work which was originally intended to be issued annually. Hereafter it will be published quarterly on account of the need of more frequent revisions. It is declared to be the only complete illustrated list of electrical fittings approved by the Underwriters' National Electric Association for use under the rules and regulations of the National Board of Fire Underwriters. Besides the list of the approved fittings, it includes a new feature in the publication of the revised National Electrical Code, with drawings illustrating the application of many of its rules. In general, each electrical article or fixture used in the electrical trades has below its picture the name of the maker or firm from which it may be secured. A classified index of material at the front gives manufacturers' names and pages on which the articles sought will be found.

Men Who Sell Things, by Walter D. Moody. Pages, 295; 5 x 7¼ in. Published by A. C. McClurg & Co., Chicago.

"This book," as the author expresses it, "is an attempt to specify the qualifications necessary to the making of a successful salesman, and the reasons for so many failures in the greatest profession on earth, the profession of salesmanship." It is written from a viewpoint of the author's observations and experiences of over 20 years as a salesman, European buyer, sales manager, and, finally, employer. In an analysis of what constitutes the most essential elements of sucessful salesmanship, "pure grit" is given rank as one of the most important, for the reason that therein lies the power to do a good honest day's work; and intelligent, energetic, industrious application is held to be a *sine qua non*—the foundation of all successful effort. Special emphasis is laid upon the necessity of specializing effort, singleness of purpose being declared one of the predominating features of successful salesmanship. A sharp distinction is drawn between the order taker, the man without intelligent initiative, and the tactful, wide awake salesman, who realizes that effective salesmanship involves a comprehensive knowledge of human nature as well as of goods. The book throughout reflects a spirit of optimistic ambition and confident enthusiasm, which are the arms and armor of a salesman.

The Rotary Internal Combustion Engine Company, 30 Lawrence street, Newark, N. J., incorporated with a capital stock of $200,000, will shortly place on the market its rotary internal combustion engines. Oscar Anderson is president; John Hokenson, vice-president, and Moritz Hoffmann, secretary.

The Virginia Iron, Coal & Coke Company, Bristol, Va., has resumed operations at its Crescent rolling mills, which have been closed down for two months.

The Economy Tie Plates.

Increased speed and heavier loads are constantly exacting higher grade track material, both in quality and weight, and railroad maintenance of way departments are being pushed to keep abreast of traffic requirements. Because of the growing scarcity of new tie material there is an ever increasing need of economy in its use, which naturally suggests measures for increasing the life of ties. In recent years the introduction of tie plates has not only contributed to this end, but has also added to the general strength and reliability of track construction.

Three new patterns of tie plates, shown in the accompanying illustrations, are being manufactured and introduced by the Spencer Otis Company, which has general offices in the Railway Exchange Building, Chicago, and branch offices in Omaha and New York. These, known as the Economy tie plates, are made of rolled steel, and are designed to combine maximum strength with minimum weight, together with convenience in readjustment and increased adhesion to the tie.

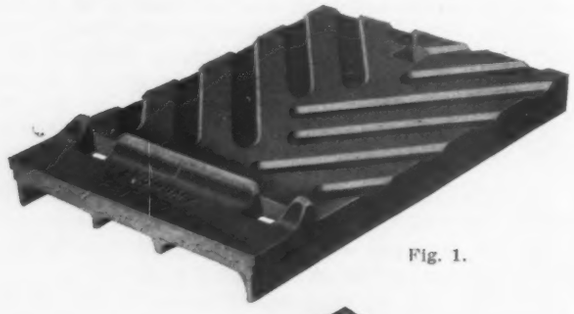


Fig. 1.

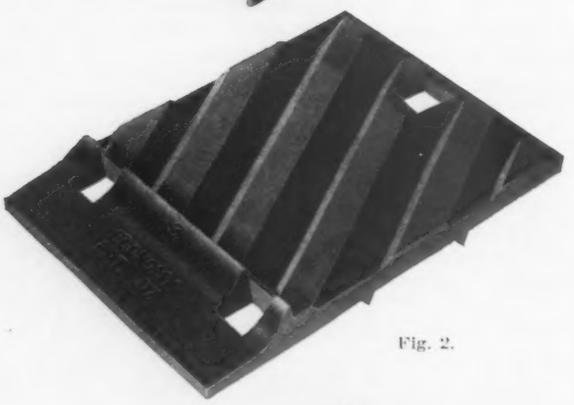


Fig. 2.

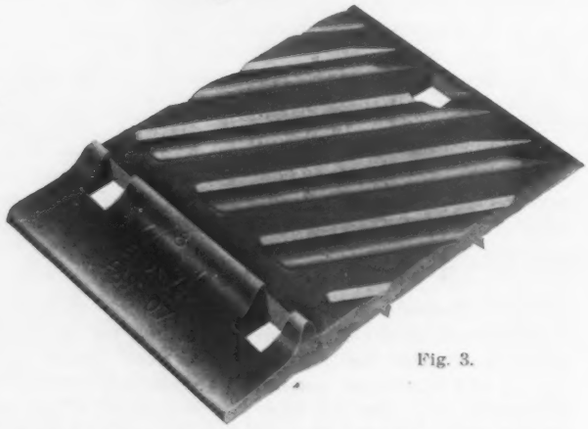


Fig. 3.

Three Patterns of the Economy Tie Plates Made by the Spencer Otis Company, Chicago.

Fig. 1 illustrates the four-flange tie plate, which is rolled in nominal lengths of 8, 8½ and 9 in. by 5 in. wide and 5-16, ⅜ and ½ in. thick. They are also furnished in 6-in. widths by 8 and 9 in. long. Fig. 2 shows a pattern with diagonal ribs having lateral holding flanges on the under surface. This plate is made in the same lengths as that of Fig. 1, in widths of 6, 6½, 7, 8 and 8½ in. by ⅜, 7-16 and ½ in. thick. Fig. 3 is a plate of an entirely new design, having alternate flat and round ribs or corrugations rolled in its upper surface with a flat bearing surface on the tie except for the reinforcement under the shoulder. The latter is designed to prevent buckling and to furnish additional strength at the point where it is most needed. This plate is furnished in the same sizes as that of Fig. 2.

All of the plates are provided with flanges or shoulders on the rail bearing surface, which serve the double purpose of keeping the rail from shifting laterally and protecting the spike from the shearing action of the rail. It is claimed that the use of this shoulder permits reducing the number of spikes used 33 to 50 per cent. Punched as shown in these illustrations the plates may be used for either right or left hand spiking. They can, however, be punched in accordance with specifications furnished to meet the requirements of any road or for the various rail sections used.

The Gas Engine's Probable Future.

In an address on the above subject, delivered before the Engineers' Society of Pennsylvania, February 6, 1908, the retiring president, Sumner B. Ely, accounted for the greater development of the gas engine abroad, by the conditions there being the reverse of those here—fuel is scarce and labor cheap. He mentioned particularly the notable installations in Germany which have demonstrated that in point of reliability the gas engine now compares favorably with the steam engine. The gas engine has a high thermodynamic efficiency, and in spite of the heat wasted in jacket water and the exhaust there still remains an excellent commercial efficiency. The speaker considered it safe to say that in average practice a gas engine will require about one-half as much fuel as a steam engine.

The most serious disadvantage of the gas engine was declared to be its inflexibility in the matter of loading. The maximum efficiency is at maximum load, consequently gas engines are generally sold with very little overload margin, and they cannot be depended upon for very good efficiency at below 80 or 85 per cent. of their full load. Here the steam engine is superior, since it will operate with excellent economy over a relatively wide range of load, both above and below its normal load.

An objection often raised against the gas engine to which the speaker attached little importance is the difficulty of reversing it, since satisfactory clutches are available for very large as well as small power. He believed that the more general use of gas engines depends above all else upon the ability to produce suitable gas for operating them. It has been established that gas engines are successful mechanically; that blast furnace gas can be properly cleaned; that natural gas can be used, and gas made from coke or anthracite coal, but the speaker maintained that there is not yet an altogether satisfactory gas producer for bituminous coal. Since bituminous coal is by far the most abundant, he holds no hope for the very general adoption of gas engines until such a producer appears. The difficulty is the cleaning of the gas sufficiently to prevent deposits on the gas engine cylinder walls without the use of such complicated apparatus, that it is often necessary to market a by-product to obtain commercial results, which generally debars the small plant. Mr. Ely anticipated that before many years gas engines will be producing a brake horsepower on 1 lb. of bituminous slack coal, from a simple and efficient producer, but did not concede that the steam engine will ever be entirely replaced.

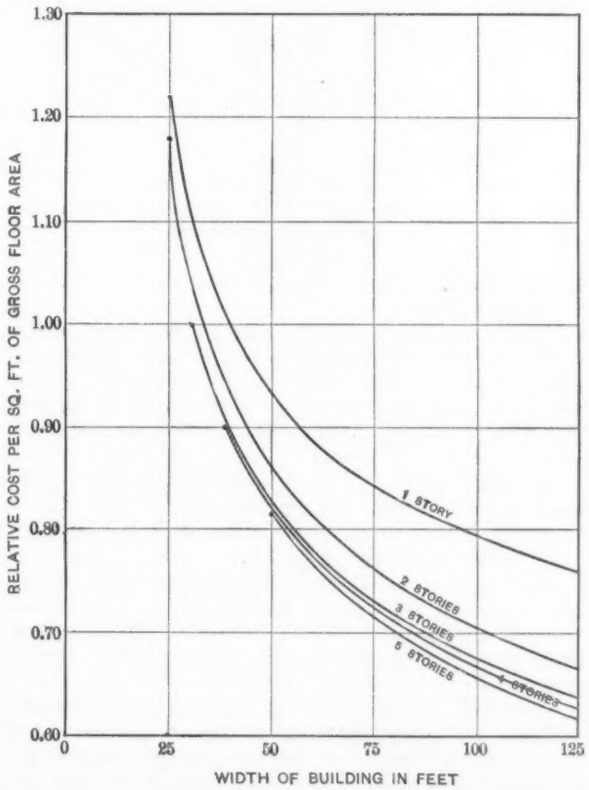
The G. Drouvé Company, Bridgeport, Conn., at the annual meeting of its directors, held February 3, elected G. Drouvé, president and treasurer, and William V. Dee, secretary. Mr. Dee, who recently resigned from the *Railway Age* to take an interest in the company, has been appointed general sales manager. The company manufactures the Anti-Pluvius skylight, of which 125,000 sq. ft. has been installed on the Hoboken terminal of the Delaware, Lackawanna & Western Railroad, and the Lovell window operating device, now used in the shops of the New York Central at Harmon, N. Y.; Delaware, Lackawanna & Western, at Scranton, Pa., and a number of others; also the Drouvé ventilator, drying stove, &c.

The Cost of Building Construction.

While the cost of buildings for manufacturing purposes must of necessity vary with their design and locality, certain fundamental relations exist between different types, which, if known, are of great assistance in the planning of new plants. To a very great extent these relations, although generally determinable by calculation, are intentionally or otherwise the professional and trade secrets respectively of the architect and the contractor. True it may be that conditions frequently give but little latitude for choice in design or construction, but just as truly the owner seldom finds available information which aside from the ideas of his individual architect will enable him to judge independently of relative costs.

The Relation of Floor Space to Hight of Building.

A generous contribution to the general dearth of public knowledge of this subject has been made by Charles T. Main, well known as a mill engineer and architect of wide experience. In his paper on the "Approximate



The Influence of Width and Hight on the Cost of a Building 300 Ft. Long, of Ordinary Mill Construction.

Cost of Mill Buildings" his discussion refers solely to ordinary mill construction with brick walls and heavy timbered floors and roof. In this paper he showed as one of his conclusions that in a building of this type the minimum cost per square foot is practically reached with a four-story structure. The relation is somewhat affected by the length of the building as well as by its width and hight. A three-story building is slightly more expensive, while a one-story building is obviously the most costly. From the data presented by Mr. Main, in a number of diagrams, the accompanying individual set of curves has been prepared to show the relative cost per square foot of gross floor space for different hights of a typical building 300 ft. long, of different widths. From this it is at once apparent that the difference between the costs for three, four and five story buildings is so slight as to exert but a secondary influence in determining the hight of a building. In fact, the hight may be determined by other factors, principal among which will naturally be the available ground area and the ground rent or fixed charges thereon.

The Cost of Elevation of Material

is sometimes regarded as a factor requiring consideration. But calculation will at once show the infinitesimal power expenditure for this purpose required even in the largest plant. Suppose the weight to be lifted in the course of a year through a distance of 15 ft. to be 100,000 tons, the work done will be equivalent to 3,000,000,000 ft.-lb. If this work were performed continuously during 300 working days of 10 hr. each, the work per minute would be 1667 ft.-lb., which is equal to only 0.05 hp. On a basis cost of $30 annually per horsepower, this would represent the insignificant sum of $1.50 actually expended for this purpose during the entire year. The real cost of elevation is manifestly in the equipment and its maintenance. It is evident that the equipment provided for a two-story building will serve additional stories with but slight increase in the cost of construction. Of course where under the modern conditions of transportation by traveling cranes the multistoried building is not permissible without excessive waste in hight, the nominal single-story construction must prevail. But this, as in the case of the gallery type of machine shop, may be in effect a two-story shop throughout about two-thirds of its width.

Roughly speaking, if the cost per square foot of floor in such a building is 1, it will be about 1.25 in a similar design of one-story only, and from 0.8 to 0.9 in a three-story building approaching it in structural design.

Light from Roof or Sides.

The saw tooth or monitor systems of lighting have considerable effect upon the cost of a single-story or gallery type building as compared with one of several stories where side lighting must be depended upon. Generally speaking, for adequate lighting from the sides the hight of the stories must increase with the width of the building. The windows should run up as near the ceiling as possible. Distribution of light will be greatly improved by the use of ribbed glass, or, better still, by prismatic glass, but the latter is decidedly objectionable if subjected to the direct rays of the sun. Windows running down to the floor have but little effect upon the general lighting where lines of machines run close to the walls and cut off the light which might otherwise be diffused.

While window area may be less expensive than wall surface, it necessarily increases the cost of heating. An ordinary window is generally classed as having about four times the transmiting power of a 16-in. wall. In other words, on this basis it would require, roughly speaking, about four times the heat for a building entirely of glass as compared with one having solid 16-in. walls. Of course, the heat penetrating effect of the sun in the case of the transparent glass would greatly modify this relation.

After all is said and done, the manufacturer requires, above all, the building best suited for the manufacture of his particular product. Its construction may or may not conform to the most economical type, but if it is such as to insure the production of the maximum profit it is certainly warranted.

The Youngstown Sheet & Tube Company, Youngstown, Ohio, has recently placed some large contracts for equipment to be used in extensions to its plant. A large part of this work was held up in November when the depression care, but it will now go forward. Work will commence at once on a new galvanizing plant, a large warehouse, two pipe mills and other new construction, which will involve an outlay of $300,000 or more. Some work has been done right along on the two blast furnaces being built by the company, and they are expected to be ready for blast in April or May. When these furnaces are finished it is the intention to start work on two more.

The Smooth-On Mfg. Company, manufacturer of Smooth-On iron cements, 572-574 Communipaw avenue, Jersey City, N. J., has opened branch offices at 61-69 North Jefferson street, Chicago, Ill.; 20 Sacramento street, San Francisco, Cal., and 8 White street, Moorfields, London, E. C., England. The company has just issued a pamphlet entitled "History," which narrates the story of the different Smooth-On cements.

Autogenous Welding.

BY W. I. REICH, PITTSBURGH, PA.

In the last year several autogenous welding equipments were installed in this country which operate with more or less success, and the process promises to become as useful here as in Europe.

Electric arc welding is the oldest autogenous welding process. It was introduced by Bernardos about 12 years ago. At present it is only successfully used for repairing steel castings. The joint is only about 40 per cent. as strong as the stock; however, it is quite satisfactory for carrying the magnetic lines in cast steel frames of electric machinery. Direct current of about 200 to 1000 amperes at about 60 to 100 volts is generally employed, depending on the size of the arc. The carbon electrode is usually chosen as the negative pole, to prevent the excessive carbonizing of the joint. For medium heavy castings about 500 amperes at 100 volts is required, which represents 50 kw. Assuming a kilowatt-hour to cost 3 cents, the expense for current consumed will amount per hour to $1.50. The best practice is to provide a storage battery in parallel with the line, which will take care of the high peak, in starting the arc. The operating expenses can be reduced by using a small generator, storing up the energy in the storage battery.

Oxy-hydrogen autogenous welding was introduced in France about 10 years ago, and is even now used very successfully on light sheets, where the hydrogen is made as a by-product, as in electrolytic works. Hydrogen can be made by decomposing calcium hydride with water. This is a very simple method, but for the present is not commercial, since the chemical is too expensive. The oxy-hydrogen welding process is rather expensive and only suitable for sheet metal up to ⅛ in. thick. The joint is very good, its tensile strength being about 95 per cent. of the stock.

Oxy-acetylene autogenous welding was first applied in France about six years ago and forced out very nearly all of the old welding methods. The process is not expensive in first cost and operation. The fuel in this case is acetylene, which costs about 0.7 to 0.8 cent per cubic foot.

For producing oxygen there are several methods. The

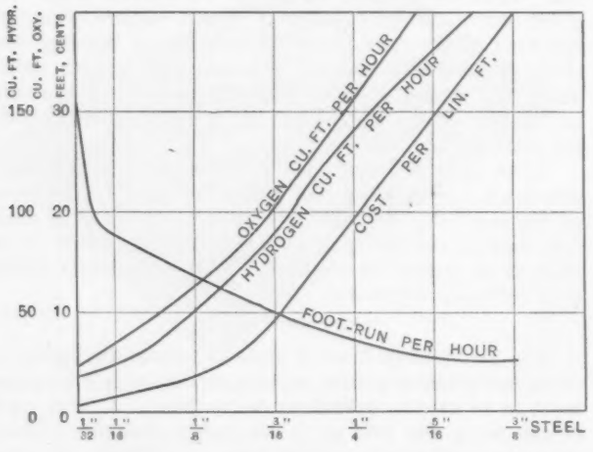


Fig. 1.—Curves of Cost and Gas Consumption for the Oxy-Hydrogen Welding Process.

electrolytic process is used extensively in Europe, in which acidulated water is decomposed by an electric current into oxygen and hydrogen. The cost in current is 12 kw. hr. per 100 cu. ft. of the decomposed gas. At 3 cents per kilowatt-hour 100 cu. ft. of gas mixture costs 36 cents and contains 33 1-3 cu. ft. of oxygen and 66 2-3 cu. ft. of hydrogen. The cost of installing and maintaining this process is very high, which makes it only suitable for large works.

Oxygen can be produced very cheaply by the fractional distillation of liquid air. The gas by this process can be sold at a good profit for 2 cents per cubic foot. It contains small traces of nitrogen, but is quite satisfactory for all practical purposes. The process requires an expensive installation of compressors and condensers, hence is only applicable in large central stations, from which the oxygen can be shipped in steel tanks at a pressure of 1500 lb. per square inch.

For smaller installations the most practical method is to produce oxygen from chemicals. It can be made from barium oxide, potassium chlorate or calcium chlorate, at a rate of about 2 cents and less per cubic foot. The cost of installing and maintaining such a plant is low.

Fig. 1 shows curves of the cost and the gas consumption with the oxy-hydrogen welding process. In this the cost per cubic foot of hydrogen is assumed to be 0.5 cent and of oxygen 2 cents. The diagram indicates how rapid-

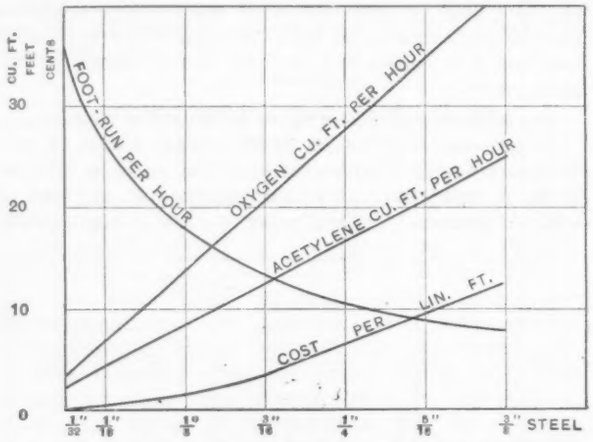


Fig. 2.—Curves of Cost and Gas Consumption for the Oxy-Acetylene Welding Process.

ly the cost per lineal foot of welded joint will increase with the thickness.

Fig. 2 shows the same curves for the oxy-acetylene welding process. In this the cost per cubic foot of acetylene is assumed to be 0.8 cent and of oxygen 2 cents. This process is better adapted commercially for medium heavy plate work, and where there is a large variety of work.

For very heavy plates and large output the water gas welding process can be used successfully. Such an installation is only suitable for large works producing at least 50,000 cu. ft. of gas per day. This process is not commercial for plates thinner than ¼ in., and is most economical for steel plates between ⅜ and ¾ in. thick. It does not belong to the autogenous welding methods, since mechanical means have to be employed to unite the metals.

There is a large field for the autogenous welding process, and its success depends entirely on the cost of the gases. No doubt the cost of hydrogen will be considerably reduced as soon as the electrolytic works take the trouble to collect the gas, and the price of carbide and its product, acetylene, will be reduced in a few years, since the carbide patents have only a short time to run. With a larger consumption of oxygen this gas, too, will become cheaper. It is used extensively in the arts—*e. g.*, in blast furnaces and for bleaching, for submarine service and for medical purposes.

With the wider adoption of autogenous welding will come a new era in the art of metal construction; the riveted joint will be largely displaced by a seamless joint in boilers, tanks, blast furnaces and gas flues, water pipes, and wherever a high efficiency of joint is most desirable.

The Craig Shipbuilding Company, Long Beach, Cal., is building a complete shipbuilding plant. The buildings to be erected consist of a structural iron shop, 46 x 177 ft.; power house, 40 x 48 ft.; mold loft, 40 x 208 ft.; foundry, 88 x 97 ft., and brick machine shop, 90 x 128 ft. The work on these buildings is rapidly progressing, a part of the machinery is on the grounds ready for installation, and the company expects to be ready to start up about March 1.

The Westinghouse Machine Company, Pittsburgh, has received an order from the Duquesne Steel Foundry Company, Kendall Station, Pa., for a 19 x 22 in. vertical gas engine.

The Standard Roller Bearing Hanger Box.

The roller bearing hanger box which is now being put on the market by the Standard Roller Bearing Company, Philadelphia, Pa., is made in all commercial sizes from 5-16 in. shaft up. It is interchangeable with any existing hanger having universal adjustment, such as is shown in Fig. 1, and it is the intention later to make them interchangeable with any size hanger, whether it has universal adjustment or not.

The parted view, Fig. 2, shows clearly the construction of the hanger box. A hardened steel sleeve is first placed on the shaft, so that the rollers will run on a hardened and ground surface. The rollers themselves are

Fig. 1.—A Shaft Hanger Equipped with Standard Roller Bearing Box.

fitted in a cage with a ball at the end of each roller to take the end thrust. The boxes themselves are hardened and ground so that the rollers on both top and bottom run on hardened and ground surfaces. This reduces the friction at any one point, which would occur if a ball were used instead of a roller. The hanger boxes are very easily applied, and it is claimed have given entire satisfaction in every place where they have been installed.

Some interesting tests have recently been made in the Standard Roller Bearing Company's testing laboratory, using a Golden dynamometer similar to the one at Purdue University. These tests show that the frictional horsepower for the roller bearings is independent of the speed and independent of the load on the bearing, within certain limits. They also show that with a light load on the

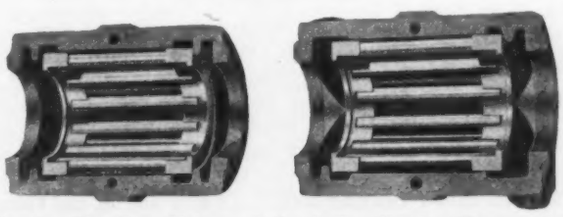


Fig. 2.—The Two Halves of the Roller Bearing Hanger Box Made by the Standard Roller Bearing Company, Philadelphia, Pa.

bearing the frictional horsepower is proportional to the revolutions per minute and with more load increases rapidly with the speed.

These laboratory tests were followed by tests made in the shop under the same conditions as would be found in machine shops generally. The tests extended over a month and were made on a 2 7-16 in. main shaft 110 ft. long, running at a speed of 220 rev. per min. and supported by 14 hanger boxes. In the first test all countershaft belts were on and a saw, a cutting off machine and two wizzers were being driven. With babbitt boxes the average horsepower required for the drive was 6.163 hp. and with roller bearing boxes 4.9637 hp., making the saving for the latter 20 per cent. In the second test the countershaft belts were on, but no work was being done. The average power required was in this case 4.263 hp. for the babbitt boxes and 3.2887 hp. for the roller bearing boxes, or a saving with the roller bearings of 22.3 per cent. In the third test all belts were off, except the driving belt from the motor, and 1.825 hp. was consumed with babbitt boxes and 0.8378 hp. with roller bearing boxes, which therefore showed a saving of 54.76 per cent.

Since making the foregoing tests the same hanger boxes have been tested in two large industrial establishments of Philadelphia. In one a saving in power required of over 31¼ per cent. was effected, and in the other 40 per cent. In view of the large number of extraordinary laboratory tests which have recently been reported, it is interesting to know the results which can be obtained in every day use by the installation of roller bearings in shafting hanger boxes.

Hollow Staybolts.

BY JOHN HICKEY, SALT LAKE CITY.

Having been troubled with broken staybolts on several mountain engines, due to variation of pressure followed by extremes of temperature several times a day, the writer had some hollow staybolts placed on surfaces giving the most trouble from broken bolts. As the solid staybolts and those having drilled telltales were removed, they were replaced by hollow ones. After about a year of this practice it was noticed that the staybolt work at the short run terminals was very materially reduced. Prior to this, the life of the solid staybolt with telltale drilling was between five and nine months, depending on location in staying, while after this time, a little over a year, there was no record of a single hollow bolt being broken, although located mostly in what was considered the breaking zone. Longer periods of experience with the hollow bolt developed equally good results, its endurance being remarkable under the severe conditions existing.

The self-warning principle of the hollow staybolt is highly appreciated by those directly in touch with the power generator. Eliminating the hammer tests, together with the feeling that no dangerous number can be broken without compelling attention, is regarded as a very satisfactory condition. It is well known that the strength of wrought iron decreases after reaching 350 degrees F. Moderately high firebox temperature causes a solid staybolt to reach the depreciative heat, this being one of the causes which shortens its life. With the hollow staybolts in service a streamlet of cool air passes through each bolt to the furnace, thus holding the metal at a lower temperature, furnishing both strength and endurance that cannot be obtained with the use of the highest possible grade of iron in the solid staybolt. The greater endurance of the inner ends of the hollow bolts, as compared with solid ones, is very noticeable. This is due to the in rushing air through the hollow bolts cooling the ends of the bolts and reducing the waste of the iron due to the high heat of the fire.

It is said that a few have closed the center holes at the inner ends of the hollow staybolts with a couple of blows of the hammer, claiming the entrance of too much cold air. This practice, the writer is certain, should be discouraged. In order to obtain full benefits from the hollow bolts, the air should be permitted to pass through the ⅛-in. hole to the fire. This will hold the staybolt to lower temperature, add to its strength and flexibility, cause greater endurance to the inner ends, and while aiding combustion will add noticeably to the efficiency of the furnace. It will further afford a double advantage for the detection of breakages should any occur, as the annular hole passes entirely through the bolt and failure at any point will immediately make itself known.

Hollow staybolts with both ends open will never stop up, as the current of air passing through them always keeps the holes free from sediment. Furthermore, the hollow bolt saves material and time in application and renewals, and also prevents injury to sheets in making renewals, as the operator has a central hole for his drill to follow.

New Central Metal Working Tools.

Two sheet metal working tools, recently designed and constructed by the Central Machine & Metal Company, Moline, Ill., are here illustrated. Fig. 1 represents what is styled the D-Q (double quick) folder, which is described as a strongly built and durable machine. It is provided with a heavy locking bar and drop folding leaf, the former being operated by connected cam levers on top and the latter by a hand lever at the left of the machine. Single lock edges ⅜ or ½ in. wide, or double lock

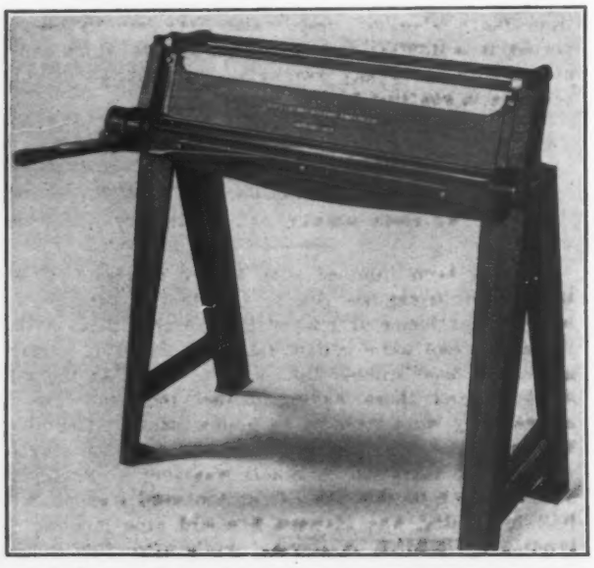


Fig. 1.—The D. Q. Folder Built by the Central Machine & Metal Company, Moline, Ill.

edges of the same size can be formed with this tool on sheets of 24 gauge and lighter, 30 in. wide and narrower. Double lock edges may be formed without releasing hold of the folding lever, which by its quick double action sets the pin gauges for double lock edges. Convenience and rapidity of operation are the objects aimed at in the design of this machine, and a great increase in the effective speed of folding double cross lock

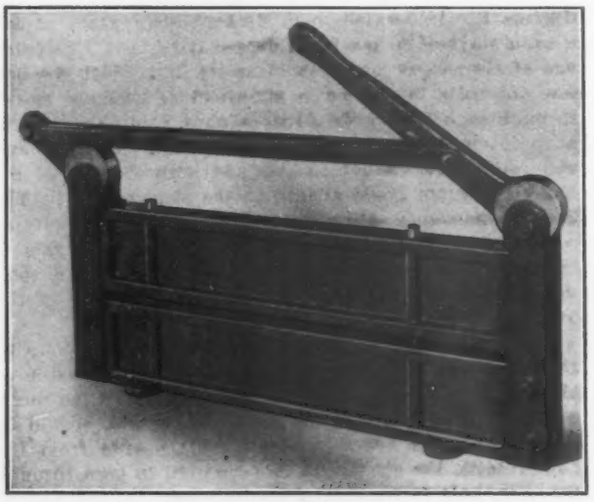


Fig. 2.—The Central Cross-Lock Seamer.

edges is claimed for it. The folder is mounted on heavy cast iron legs, provided with holes in the feet to fasten it securely to the floor.

Fig. 2 illustrates a newly designed machine for making cross lock seams. It is operated by connected cam levers and is provided with automatic pin gauges. The machine has a capacity for making ⅝ and ½ in. double lock seams on sheets No. 24 gauge and lighter, in widths up to and including 30 in.

The company since its organization about 10 months ago has devoted its energies to the designing, developing and manufacture of special dies, tools and stampings, and the above machines are representative of its progress in developing modern metal working machines.

The Spacke Motor Driven Air Compressor.

Air compressors of small capacity and simple construction are often of service in machine shops, foundries and other plants for operating light hoists and other tools, where the total supply of compressed air required is moderate. The motor driven compressor here illustrated, which is included in a line of such equipment made by the F. W. Spacke Machine Company, Indianapolis, Ind., is designed to meet these requirements. It is compactly assembled with the compressor and motor mounted on the same base and can be set up and operated without providing an expensive foundation. The particular features of improvement that are claimed to result in increased efficiency are the separate and easily accessible valves, and very small cylinder clearances. The latter are regarded as especially essential to the successful operation of small compressor units, but are not always provided.

Proper speed reduction from the motor drive is obtained through a train of gears meshing with a rawhide pinion on the motor shaft. These compressors are built in capacities ranging from 3 to 30 cu. ft. of free air per

A Small Motor Driven Air Compressor Made by the F. W. Spacke Machine Company, Indianapolis, Ind.

minute, for either belt or motor drive, and are supplied with air or water cooled cylinders as desired.

Manufacturing plants engaged in iron and steel and sheet metal lines in Canton, Ohio, are rapidly recovering from the effects of the recent depression, and many of them are now running at about their normal capacity. The plant of the United Steel Company started up last week, after a shutdown of several weeks, and now has a good volume of orders on hand. The plants of the Timken Roller Bearing Axle Company and of the Carnahan Tin Plate & Sheet Company, which have been shut down, have also started up. The new plant of the Schuil Steel Castings Company has started up, the first heat having been run off last week. The plant of the Canton-Hughes Pump Company is now running at about its full capacity. The Republic Stamping Company reports that it is running its plant with its full force 12 hr. per day, and that it is behind on its orders.

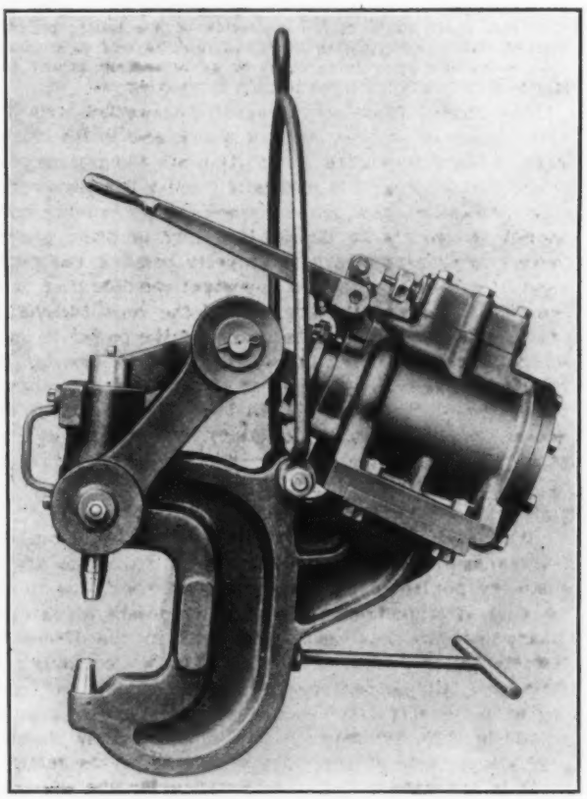
Owing to the growth of the business of Wickes Brothers, it has been deemed desirable to separate the business of the company. The boiler department has, therefore, been organized as an independent company under the name of Wickes Boiler Company, with a capital of $500,000, and with main office and works at Saginaw, Mich. The ownership and management of the new company remain substantially as before the formation of the new corporation.

A New Albree Portable Compression Riveter.

Where the work is heavier than the tools it saves time and increases convenience if the tools are brought to the work and in the assembling of structural members this is generally the case, making a portable riveter especially desirable. The hydraulic riveter is not practical for this service, on account of the difficulty of providing flexible high pressure water lines and carrying away the exhaust water.

An air driven machine, similar to the one illustrated herewith and built by the Chester B. Albree Iron Works Company, Allegheny, Pa., is admirably adapted for this work, as the air is conveyed to it by a rubber hose and exhausted directly to the atmosphere.

It will be noticed that a comparatively small cylinder is used, the necessary pressure being obtained by the toggle leverage shown, and as the rivet is driven by



A Portable Compression Riveter Made by the Chester B. Albree Iron Works Company, Allegheny, Pa.

one squeeze the number of rivets the machine can drive is practically unlimited. Therefore the amount of riveting that can be done is merely a question of getting the machine from one rivet to the next, in other words, the cost of riveting is almost entirely the cost of moving the machine. The riveter illustrated has a 6-in. reach, will drive a ⅞-in. rivet, and weighs 850 lb. When desired this machine may be equipped with the maker's universal bail, which will hold it suspended in any position.

As an example of what has been done with such a machine under favorable circumstances there is reported an astonishing record—12,000 rivets driven in 10 hours. The work was a long plate girder and the machine was suspended from a trolley on an overhead runway. The operator, with practice, had become expert in moving the machine from one rivet to the next, the spacing being equal, and several heater boys keeping the holes ahead of the machine full of hot rivets. The rivets were ¾-in. diameter and were driven hot and the dies were replaced by cool ones at given intervals.

The next best performance on record was 10,000 rivets in 10 hours, under very similar conditions. These figures, of course, are merely of interest to show what has actually been done. The type of work, of course, is all-important. On boiler work, where the rivet must be steam tight and well driven, no such record could possibly be made.

Portable riveters have a wide range in practise and seem to be growing in favor.

Flexible Metal Belt Lacing.

What is described as a radical departure in metal belt lacing is represented in the accompanying illustrations, which show a device recently patented and now manufactured by the Flexible Steel Lacing Company, 71 West Jackson boulevard, Chicago. Flexibility, strength and ease of application are the features of merit particularly emphasized in connection with this fastening.

Fig. 1.—A Started and Finished Application of the Belt Lacing Made by the Flexible Steel Lacing Company, Chicago.

Application is made by first dropping the sections of lacing together in the position shown on the end of a belt section in Fig. 1. The prongs of each section are then pressed into the belt and, being firmly driven in, are tightly clinched. The lacing engages both sides of the belt equally and throws the strain upon the hinge in the direct line of the pull. This lacing is referred to as suitable for leather, rubber or textile belts and is furnished in boxes containing assorted sizes. No. 2 flexible steel lacing is designed for single leather, rubber or textile belting not over 7-32 in. thick; No. 4 is suitable for medium double leather and textile belting not over ⅜ in. thick. The former is made with longer prongs on one side of the belt than the other while the latter is made with alternate short and long prongs, as shown in Fig. 2.

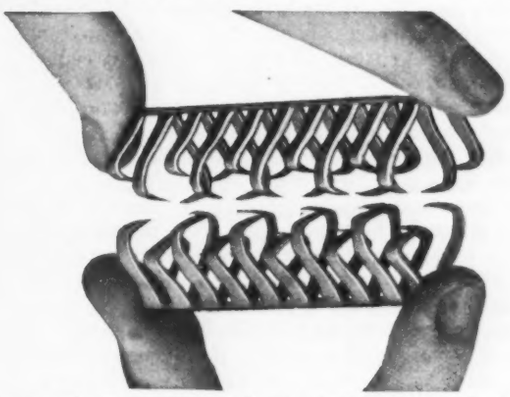


Fig. 2.—The Two Parts of the No. 4 Flexible Steel Lacing Separated.

An Exposition of Safety Devices.—Announcement has just been made that an exposition of two months will be held early in April in New York, under the auspices of the American Museum of Safety Devices and Industrial Hygiene, for showing the best methods of safeguarding workmen and protecting the general public. The exhibits will consist of safety devices, protected machinery in actual operation, models and photographs. During the exposition illustrated lectures by engineers will explain industrial conditions and hazardous occupations and the most approved methods of safety. Believing that many accidents are preventable and to stimulate further invention, three gold medals are offered for the best safety device in the field of transportation, mining, motor vehicles and motor boats. Two prizes of $100 each, one for the best essay on "The Economic Waste Due to Accidents," the other on "The Economic Waste Due to Occupational Diseases," are offered. The chairman of the Committee of Direction is Charles Kirchhoff, and of the Committee of Exhibits, Prof. F. R. Hutton. There will be no charge for space. All inquiries and applications for space should be made to Dr. W. H. Tolman, at the Museum, 231 West Thirty-ninth street, New York City.

National Labor Legislation.

Important Measures Coming Up in Congress.

WASHINGTON, D. C., February 11, 1908.—Employers are deeply interested in recent developments in Congress resulting chiefly from the action of the United States Supreme Court in declaring unconstitutional several so-called "labor" laws. These decisions have greatly incensed the labor leaders, who have promptly brought pressure to bear upon Congress to secure the passage not only of statutes intended to close the gaps pointed out by the court, but also of laws granting special privileges to workingmen. Energetic action will be necessary to prevent the enactment of one or more of these examples of vicious class legislation, especially as the President's recent message is a direct attempt to commit his party to the support of some of the most flagrant.

The wrath of the labor leaders is due especially to the decisions of the United States Supreme Court in the case of the employers' liability law and the so-called Erdmann act, which made it unlawful for a common carrier to discharge an employee because of his membership in a union. The labor lobbyists have haunted the corridors of the Capitol and frequently visited the White House since they were handed down. Under this pressure a number of extreme "labor" measures have been brought forward the past week.

The House Committee on Interstate and Foreign Commerce has agreed to report the so-called Townsend bill, which provides for the investigation of labor controversies "concerning wages, hours of labor or conditions of employment" between an employer and his employees "by reason of which the transportation of the mails or the free and regular movement of commerce among the States is, in the judgment of the President of the United States, interrupted or directly affected." The President may appoint a commission to investigate and ascertain the facts in the case and to make a report to him which he is authorized to make public or to transmit to Congress with recommendations for legislation. The commission is to be empowered to administer oaths, require the attendance and testimony of witnesses, and the production of books and papers, and is authorized to invoke the aid of the United States courts in the event of the resistance of either party. This bill has been strongly opposed by the railroads, which, of course, are the corporations aimed at. The labor leaders are much elated over their success with this measure, as they believe that in many instances railroad companies can be forced to make concessions to labor, rather than submit to a detailed investigation of their books and papers by a commission and the publication of the findings, not to mention the possibility of adverse legislation by Congress.

The Gompers Eight Hour Bill Again.

Readers of *The Iron Age* will remember the protracted campaigns in the Fifty-sixth, Fifty-seventh and Fifty-eighth Congresses to secure the passage of a law designed to compel private manufacturers having Government contracts or subcontracts to put their plants on an 8-hr. basis. The original bill, drawn by Representative Gardner of New Jersey, with the collaboration of President Gompers of the American Federation of Labor, passed the House on several occasions, but was never forced through the Senate. In the Fifty-ninth Congress no consideration whatever was given to the proposition.

Within the past few days Mr. Gardner has been appealed to by the labor leaders and has presented in the House a measure containing the general provision of the old Gardner-Gompers bill, but combining also certain features drafted by the late Senator McComas as chairman of the Senate Committee on Education and Labor. It provides that every such contract shall stipulate a penalty "of $5 for each laborer or mechanic for every calendar day in which he shall be required or permitted to labor more than 8 hr. upon such work." Mr. Gardner's bill has been referred to the House Committee on Labor, of which he is chairman, and efforts will be made to force the committee to give hearings, to begin at an early date.

A New Antiinjunction Bill.

Next in importance to the 8-hr. bill is a measure introduced by Senator Beveridge of Indiana. This bill is designed to deprive the courts of the power to grant injunctions in labor disputes except under conditions which would render a restraining order of no value whatever to the applicant, as every manufacturer who has had experience with strikes involving violence knows that a temporary injunction to be of service must be promptly issued, and often without knowledge on the part of the applicant concerning the identity of the parties sought to be restrained. The bill is as follows:

That no temporary injunction or temporary restraining order shall be issued without notice by any court of the United States in controversies between employers and employees, and all such temporary injunctions and temporary restraining orders shall be heard by the court issuing the same within a reasonable time, not to exceed seven days from the date when said temporary injunction or temporary restraining order is issued; provided, that said court, upon agreement of parties or at the application of the defendant, may postpone said hearing to a later date than said seven days, in the discretion of the court; provided further, that nothing herein contained shall be held to authorize the issuing of a restraining order or an injunction in any case in which the same is not authorized by existing law.

The House Judiciary Committee struggled with the anti-injunction problem for four years, and in the closing days of the Fifty-eighth and Fifty-ninth Congresses postponed the pending bills indefinitely after hearings which fully developed the grave dangers that would ensue should the courts be deprived of any of their present powers to prevent injury to property pending the settlement of a controversy. An important consideration with the committee was the question of the constitutionality of a provision depriving the courts of the power to issue injunctions in labor disputes only, thereby clearly discriminating as between different classes of applicants for relief. Senator Beveridge's bill has been referred to the Senate Committee on the Judiciary, and a vigorous campaign for its passage is under way, which is supported by the President in his recent message.

Jury Trials for Contempt.

With a view to relieving labor leaders, and especially the managers of strikes and boycotts, from liability to summary punishment for contempt of court, due to the violation of injunctions and restraining orders, an extraordinary measure has been introduced in the House by Representative Sabath of Illinois. The bill not only provides that all persons charged with contempt, not committed in the actual presence of a judge, shall be granted a trial by jury but deprives the judge who has issued a preliminary writ of the right of sitting in the trial.

It is understood that the incentive for the presentation of this bill at this time is the broad and comprehensive injunction granted by Justice Gould in the Supreme Court of the District of Columbia against the officers of the American Federation of Labor in the boycott case brought by the Buck's Stove & Range Company. Despite the restraining order issued in this case, the organ of the Federation continues to call attention to the fact that organized labor is arrayed against the stove company and, in the opinion of many lawyers here, the publishers of the organ have rendered themselves liable to punishment for contempt.

The decision of the United States Supreme Court to the effect that the employers' liability act is unconstitutional has resulted in the introduction by Senator Knox of Pennsylvania of a bill so drawn as to bring its provisions within the constitutional powers of Congress. This bill is understood to have been drafted in the Department of Justice and is now before the Senate Judiciary Committee. While strictly limited to carriers engaged in interstate commerce, all the drastic features of the original statute have been preserved. It goes without saying that should it pass, and be sustained by the courts, it will at once be seized upon as a model for State legislation which would deal directly with the liability of private corporations.

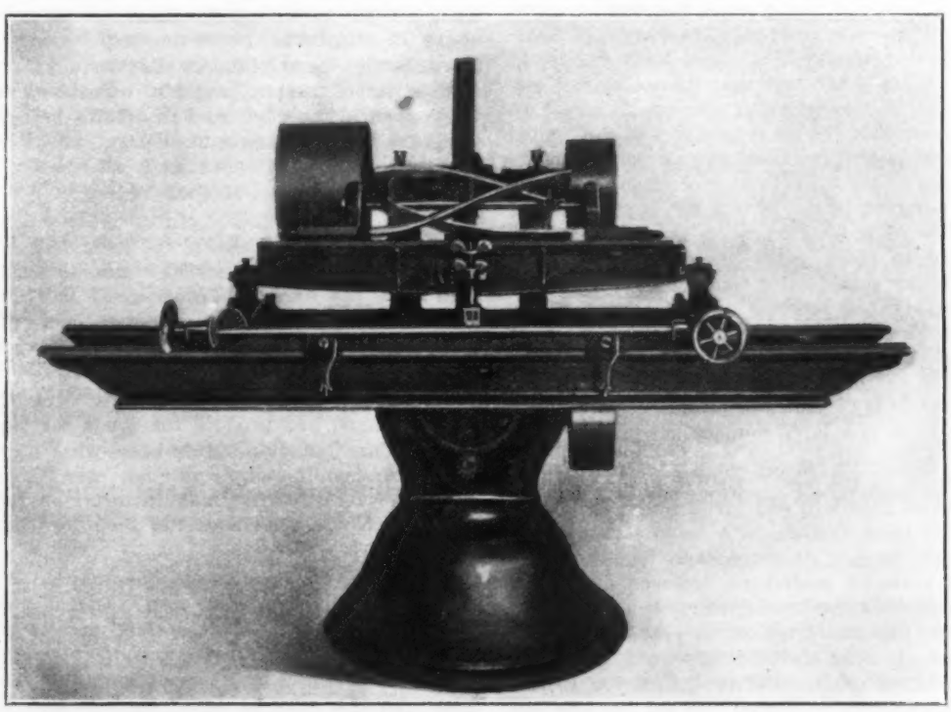
W. L. C.

The Pennsylvania Engineering Works, New Castle, Pa., builder of blast furnaces and general steel plate construction, has elected Edward King president and treasurer; Edwin N. Ohl, vice-president; Charles L. Baldwin, secretary, and Edward W. Beadel, general manager.

The New American Automatic Knife Grinder.

The automatic knife grinding machine shown in the illustration is a new type recently put on the market by the American Twist Drill Company, Laconia, N. H. It is designed for rapid accurate grinding of knives for many purposes, and is built in various sizes for grinding knives from 2 to 96 in. long, or two or more knives the combined lengths of which come within the capacity of the knife bar.

Mechanically the tool is of simple construction. The grinding wheel is mounted on the main pulley shaft, which also carries a pulley driving the feeding mechanism through three pulleys on a secondary shaft, as shown in the engraving, these working in conjunction with gearing to reverse and move the table. The central pulley is loose; the belt is shifted from one tight pulley to the other by the action of the table dogs to give the different directions of table travel. One of the tight pulleys is mounted on the shaft, the other on a long sleeve, and each operates a bevel pinion, the two engaging a large bevel gear at opposite ends of its diameter, so that the two motions imparted are in opposite directions.



A New Automatic Knife Grinder Built by the American Twist Drill Company, Laconia, N. H.

All the shafts, including the grinder spindle, are steel, with long bearings. The bearings of the main spindle are made in halves and require no adjustment as the wheel wears down. The grinding wheel turns toward the operator at 230 rev. per min. Iron center wheels of the company's own manufacture are furnished, which, it is claimed, are capable of cutting rapidly and keeping cool when running dry, obviating the necessity of using water, pumps, &c. When the wheel wears out the center may be recovered. The machines are built in seven sizes to accommodate knives of 24, 30, 36, 50, 60, 80 and 96 in., respectively.

In the illustration the grinder is shown with lawn mower blades mounted on a special fixture for grinding, the work being driven by belt and pulley in the opposite direction from the grinding wheel, and traveling back and forth until the grinding is finished.

Lake Commerce and the New Sault Lock.—The address of President Wm. Livingstone at the recent annual meeting of the Lake Carriers' Association at Detroit called attention to the likelihood that the new Davis lock at Sault Ste. Marie, for which Congress has appropriated $6,200,000, will be urgently needed before it can be completed. It is estimated that the construction of the Davis lock and its approaches will require five years. The capacity of the Weitzel, Poe and Canadian locks under ordinary conditions is estimated at 75,000,000 tons per annum, and the triffic last year amounted to approximately 60,000,000 tons. A 25 per cent. increase before the completion of the Davis lock is quite within the probabilities. The suggestion is already made that a bill be introduced in the next Congress providing for a fourth American canal. The Davis lock will be 1350 ft. long and 80 ft. wide, with a least depth of 24.5 ft. below extreme low water, and will have a capacity of 50,000,000 tons in the season of navigation. The upper approach to this lock will be an independent canal 300 ft. wide, so arranged as to provide entrance to a fourth lock when it is needed.

The Milwaukee Metal Trades and Foundry Association.

The third annual meeting of this association was held at the Hotel Pfister, Milwaukee, Wis., on the evening of January 30. S. L. G. Knox, Bucyrus Company, was elected president; George Forgeot, Allis-Chalmers Company, vice-president; Hugo Froelich, Speich Stove & Repair Company, treasurer; W. J. Fairbairn, secretary; directors for three years, Gen. Otto H. Falk, Falk Mfg. Company, and E. J. Kearney, Kearney & Trecker. The report of Secretary Fairbairn showed a year of pronounced activity, and gave in detail the work that had been done at the various shops, dealing particularly with the strike conditions which prevailed during the year. The banquet following the meeting was quite an elaborate affair. General Falk, the retiring president, was toastmaster, and in an opening address announced that the molders' strike, which had been menacing business for nearly two years, was over. He also expressed the opinion that general business conditions would continue to improve, and that there was already an upward movement which was very noticeable. He reported that, largely as a result of the efforts of the Milwaukee Metal Trades and Foundry Association, conditions in the shops of the various members were very satisfactory from a labor standpoint, and that in many instances wages had been advanced in the past year. The newly elected president, Mr. Knox, thanked the association for his election, and expressed the same general belief that business conditions would improve in every way. The regular programme of toasts was as follows: "The New Immigration," by Kent K. Kennan of Milwaukee; "The Imminent Future of America," by Prof. Edw. A. Ross of the State University, Madison, Wis., and "As Our Foreign Friends See Us," by Harry Soady. Among the guests was A. E. McClintock, commissioner of the National Founders' Association.

British Trade with Canada.

Commissioner Grigg's Suggestions for Its Increase.

A report on the conditions and prospects of British trade in Canada has been made recently to the Board of Trade of London by Richard Grigg, special commissioner of the Advisory Committee on Commercial Intelligence. Mr. Grigg went to Canada in September, 1906, and completed his work there in May, 1907. The report has evidently been published after due deliberation. From a summary of the commissioner's conclusions the following has been condensed:

Advantages of the United States.

1. The geographical position of Canada is evidently a severe handicap to British trade with the Dominion, and a great advantage to the manufacturers and merchants of the United States. The distances from the industrial centers of the United States to the Canadian markets are comparatively short; the time occupied in transit is therefore much less, and the charges for freight correspondingly small; there is great rapidity, ease and cheapness of business communication, and, most important perhaps of all, there is the fact that the social and economic conditions of two adjacent countries present so many resemblances that the manufacturers of the United States can almost regard the Dominion as being in many of its requirements only an extension of their own home market, and, therefore, as not calling for any specialized lines or methods of production, such as British manufacturers would in many cases have to undertake in order to secure any considerable Canadian trade.

2. These advantages accruing to the United States from the geographical position of Canada are so great that it is inevitable that a proportion of the Canadian trade should fall to that country. On the other hand, the United Kingdom is Canada's principal customer, with the result that there is a large tonnage moving eastward and providing comparatively low freights for that tonnage on its return to the west. British products enjoy preference, both in good will and tariff, but it is obvious that the first of these factors, in a business subject to close competition, cannot do more than turn an even, or nearly even, scale. A preference, however, amounting to a reduction of one-third of the duty, is of undoubted value to British imports, given equal skill and energy in business conduct. The statistics appear to show that the establishment of preferential treatment for British goods has to a considerable degree checked the previous decline in the hold of the British manufacturer upon the Canadian market, though some portion of the credit for this result must be ascribed to the awakening of the British manufacturer to the need of more vigorous action.

Canadian Competition and American Investments.

3. It is important to observe that the Canadian home manufacturer is now becoming a serious competitor alike with the United Kingdom and the United States. The output is increasing rapidly; the efficiency of the Canadian works is rising fast; the industrial resources of the country are great; the tariff policy of Canada is largely directed toward the maintenance and promotion of home industry, and it may not unfairly or unreasonably be assumed that before many years have passed the most serious competitor with the United Kingdom in the Canadian market will be Canada itself. The Americans have both obtained controlling interests in works in Canada and built branch factories to an important extent. I suggest that British manufacturers should consider the placing of branch factories there. Such a course would not only gratify Canadians and so enlarge sales, but it would give manufacturers a more intimate acquaintance with the market than anything else could do, and enable them to maintain stocks there more easily. Estimates of American capital invested in Montreal alone vary from $25,000,000 to $75,000,000. Inquiries are said to have been made by the Illinois Manufacturers' Association, the result of which shows that 122 of the leading concerns in the United States have established branch plants in Canada. I have a list of no less than 36 manufacturing firms in Hamilton alone, of which I am assured a substantial part of the capital (and in some cases all) is contributed from United States sources. One constantly hears that the British investor is slow, and that as a consequence the business is done by the American. There has been a very large and rapid increase in the American investments in Canada, and this will continue unless the development of British interest in Canadian enterprises proceeds at a more rapid pace than at present.

What British Manufacturers Should Do.

4. Though the problem is a difficult one, much could be done to enable British traders to strengthen their hold and even increase it upon the Canadian market, and the following suggestions are made:

a. Efforts should be made to promote and encourage facilities for quick and cheap transportation and communication. A large part of Canada's trade undoubtedly goes to the United States, not because of the superiority of the United States products, but because the goods required can be obtained more rapidly and promptly from that country than from the United Kingdom. A cheapening of telegraphic communication is also desirable.

b. British manufacturers should study Canadian conditions for themselves, and not depend so much as they have done in the past upon merchants or agents. They must follow the example of their American and German competitors in entering as much as possible into direct communication with Canadian buyers.

c. The British manufacturer must either visit the market himself—and this is the most desirable course—or he must select the very best men obtainable to meet and fight the American commercial travelers on their own lines. He must be prepared to carry on the cultivation of the market, with a small gain (possibly even with a loss) for some considerable time.

d. The British manufacturer must cater for the Canadian demand and produce the goods that are required by Canada. Canadian buyers know what they want, and if British manufacturers will not meet them they will turn elsewhere. British manufacturers produce commodities which are sometimes too good for the particular market.

e. A point of importance is the question of standards, particularly in iron and steel. Canada has adopted American standards; engineers and architects are familiar with them, and British manufacturers must adopt for goods destined for that market the same standards also. To this may be added the adoption for business with Canada of Canadian currency and weights and measures, which are similar to those of the United States.

f. Catalogues should be fuller and more detailed; weights and measures should be those of Canada, and prices should be specified always either in Canadian currency or in that and sterling. With respect to advertising, greater care appears to be desirable in the selection of journals and papers in which advertisements are inserted, and Canadian advice should be taken on this subject. It is hoped that the recent postal changes may do something to promote the circulation of English trade and other journals, where hitherto the United States publications had the field very largely to themselves. These changes include a reduction on newspapers, magazines and trade journals from the United Kingdom from 1d. for 4 oz. (the old rate) to 1d. for 16 oz., and came into operation May 1, 1907, while on May 8, 1907, an amendment to the Canadian-United States convention made the charge from the United States 1 cent for each 4 oz. or fraction of 4 oz. A remarkable result is shown in the quantity of printed matter received from the United Kingdom direct by Canadian steamers. In June, 1906, the number of newspaper sacks received at Winnipeg was 191, and in 1907, for the same month, 798 bags—an increase of 318 per cent. At London, Ont., the increase was 306 per cent.; at Toronto 184 per cent.; at Ottawa, 197 per cent.; at Montreal, 235 per cent.; at Medicine Hat and Nelson, 181 per cent.; at Calgary and Vancouver, 272 per cent. The increase of mail bags via New York, although very considerable, was not so large.

g. The adoption of the methods employed by United States manufacturers and their agents to keep acquainted with the standing financial position of Canadian firms may well be recommended to English traders, since it may enable the latter to meet (more than they have done in the past) Canadian wishes in respect to terms of credit, &c.

British Board of Trade Representatives on the Ground.

5. There is undoubtedly a need for what may be called national trade representation in Canada. There can be no question as to the substantial services rendered to United States trade by the Consuls scattered throughout Canada; at present the United Kingdom is totally without any such representation. The appointment of British Consuls, in the ordinary sense of the term, in Canada is obviously unnecessary. What is generally felt to be desirable is the appointment of competent commercial representatives, who, not having to deal with much of the ordinary work of consuls, would have the more time to devote to the trade interests of the country which they represent. The appointment of commercial correspondents, as now contemplated by the Board of Trade, is welcomed as an important step in the right direction. It is also highly desirable that all possible steps should be taken to enable the industrial and commercial organizations of the United Kingdom and Canada to keep acquainted with the general economic and trade conditions which prevail in the two countries. The Canadian boards of trade—the equivalent of the United Kingdom chambers of commerce—are kept well supplied by the United States Government with its publications, and thus have constantly exhibited before them the spectacle of the commercial and industrial greatness of the United States, whereas, from the United Kingdom they receive practically nothing. A wider distribution in the Dominion of British publications relating to trade and commerce (both official and other), and of Canadian publications in this country, would be extremely beneficial.

Federal Supervision of Manufacturing Corporations.

WASHINGTON, D. C., February 11, 1908.—The pressure brought to bear upon Congress by the administration for the enactment of laws providing for the Federal supervision of manufacturing corporations doing an interstate business has resulted in the presentation of two measures intended as the bases of national incorporation laws. One of these bills has been presented in the Senate by Senator Nelson, a leading member of the Judiciary Committee, while the other has been offered in the House by Representative Mann of Illinois, a prominent member of the Committee on Interstate and Foreign Commerce. These bills are now before the Judiciary committees of the two houses, and will be taken up for consideration at an early date.

Federal License Plan.

Representative Mann's bill provides for the registration and licensing of all corporations doing an interstate or foreign business. The provisions of the bill are not compulsory, but certain advantages held out therein are counted upon to induce the great majority of concerns doing an interstate business to take out Federal licenses and submit to the proposed measure of supervision.

Section 1 of this bill provides that any corporation doing interstate or foreign commerce may apply to the Commissioner of Corporations to be registered in the Bureau of Corporations in the Department of Commerce and Labor, and shall accompany the application with a duly certified copy of its charter and by-laws, and a statement of its financial condition. Before finally passing upon the application for registry the commissioner may address inquiries to the corporation or its officers in relation to any matter connected with its transactions, and may himself, or by some person designated by him in writing, visit the corporation and thoroughly examine its affairs and ascertain its financial condition, its ability to fulfill its obligations, &c. If the commissioner shall find that the corporation is in good financial condition and carrying on a legal business, then it shall be admitted to registry.

By section 2 every corporation admitted to registry is required to furnish an annual statement under oath showing its condition, and in addition the commissioner may at any time require such information as he may desire to be furnished him. Section 3 provides that at least once in three years, and as much oftener as he may deem it necessary, the commissioner or some person designated by him as examiner, shall visit each corporation admitted to registry and thoroughly inspect and examine its affairs and ascertain its financial condition.

The fourth section of the bill is modeled on the law governing the Comptroller of the Currency in the supervision of national banks which may be found in an unsound condition, and provides that whenever it shall appear to the commissioner that any corporation admitted to registry is in an unsound condition, or is doing an illegal business, it shall be his duty to order it to make good its financial condition or desist from its illegal business, and in case of failure to comply within the time prescribed, the commissioner may cancel the registry, and the reason therefor, and the order of cancellation, are to be entered of record in the Bureau of Corporations and made public.

Under the terms of another section, corporations admitted to registry shall, before or at the time of issuing any new stocks, bonds, debentures, or other evidences of indebtedness, file with the commissioner the resolutions of its directors or Governing Board authorizing such issuance, &c. Section 7 makes it illegal for a corporation, the registration certificate of which shall have been canceled for any reason, to advertise or make any use of such certificate, and any corporation violating this provision of the law may be denied the use of the mails.

It is understood that this measure has been submitted to the Bureau of Corporations and approved thereby, and that when it is taken up by the House Judiciary Committee the officials of the Department of Commerce and Labor will urge its enactment.

The Nelson Bill.

The bill introduced by Senator Nelson is a far more elaborate measure than the Mann bill and follows closely the lines of a measure presented in the House in the last Congress by Representative Palmer of Pennsylvania. It is intended as the basis of a law to be known as the Federal Incorporation act, and is intended to apply to such corporations doing an interstate business as may be organized thereunder, or, if already in existence, as may be reorganized to conform to its provisions. Practically every form of corporate activity is regulated by the bill. The publication of false or misleading statements concerning the condition of a registered corporation is made a criminal offense punishable by both fine and imprisonment. Each company incorporated under the proposed law will be required to pay to the United States Treasury 2 per cent. on its gross earnings in lieu of all taxes on its franchise and personal property, but the real estate of the company is made subject to taxation in and pursuant to the laws of the State or Territory or district in which it is situated.

The Nelson bill is generally regarded as too radical a measure to be made the subject of favorable action at the present time. Senator Nelson, who will be remembered as the author of the statute creating the Bureau of Corporations, is understood to be willing to accept the Mann bill as a substitute for his own measure, a fact which lends much additional importance to the provisions of the House bill. W. L. C.

Robert W. Hunt & Co. have established their St. Louis office, which is in charge of C. W. Gennet, Jr., at 1445 Syndicate Trust Building. They have arranged to locate their chemical and cement laboratory in the same building.

The Philadelphia Foundrymen's Association.

Business was deferred at the 174th regular meeting of the Philadelphia Foundrymen's Association on the evening of February 5, and in its place a triparty novelty dinner was given in honor of the New England and Pittsburgh Foundrymen's associations. A large delegation was in attendance from these associations, while as special guests the association had many of the representatives of the iron, coal and coke producing companies who had been in conference with the weight committees of the different foundrymen's associations at the Bellevue-Stratford Hotel during the greater part of the day.

The dinner was served in the banquet room of the Manufacturers' Club, which was tastefully decorated. Covers were laid for 125 members and guests. Early in the evening a reception was held in the club parlors. The principal novel features of the dinner was that the service was performed by members of the Entertainment Committee, who wore the customary chefs' caps and aprons. Another feature was a printed programme in the form of a booklet, embodying the menu, lists of officers and songs with a personal flavor, specially written for the occasion.

President Devlin welcomed the members and guests in a graceful address, and announced that Howard Evans, secretary of the association, would serve as toastmaster. At the close of the dinner the toastmaster most felicitously introduced the various speakers, among whom were W. A. Viall, vice-president of the New England Foundrymen's Association; Herbert E. Fields, president of the Pittsburgh Foundrymen's Association; John Birkinbine, Henry A. Carpenter, past president of the New England Foundrymen's Association; J. A. Penton, editor of the *Iron Trade Review;* H. L. Haldeman, B. M. Shaw, William J. Breen, J. G. Miller, P. D. Wanner, E. H. Mumford and Wm. S Hallowell. Trade conditions were touched upon by some of the speakers, allusion being frequently made to the effort to maintain prices and to prevent dangerous demoralization in business. The question of prices of raw materials was also freely discussed by some of the speakers, and Mr. Hallowell in the course of his remarks offered the following resolution, which was unanimously adopted:

Resolved, That it is the sense of the Philadelphia Foundrymen's Association that we recommend to the manufacturers of pig iron that they take united action for the purpose of establishing a minimum rate for certain standard grades of pig iron, at fixed delivery points, so that foundrymen may rely on the basis established for the purchase of their supply.

During the evening music was furnished by Harpzell's orchestra, while vocal selections were rendered by Ernest Dupille.

The committee of the Philadelphia Foundrymen's Association which had charge of the dinner and acted as carvers and servers to the members and guests was as follows: J. H. Sheeler, Sheeler-Hemsher Company, chairman; A. A. Miller, *The Iron Age*, secretary; Thomas M. Eynon, Eynon-Evans Mfg. Company; Edgar S. Cook, Warwick Iron & Steel Company; W. H. Ridgway, C. Ridgway & Son Company; H. L. Haldeman, Pulaski Iron Company; James S. Stirling, Hilles & Jones Company; E. H. Mumford, E. H. Mumford Company; Arthur Simonson, Tropenas Steel Company; Josiah Thompson, J. Thompson & Co.; H. L. Tripple, Fairbanks Company; Frank Krug, Joseph Dixon Crucible Company; Thomas Devlin, Thomas Devlin Mfg. Company; Howard Evans, J. W. Paxson Company.

The Future Gas Engine.—Discussing the probable line of development of the gas engine and the type likely to be the standard 25 years hence, *Power* says that some radical departures from present practice are inevitable. "The proposition to use a combustion chamber external to the engine, in which products of combustion are mixed with and tempered by steam, sounds attractive, but your thermodynamic investigator holds up his hands in horror at the idea of such a hybrid scheme, not to mention the difficulties of its practical application. No matter what the working cycle may be, compression of the combustion supporting air is indispensable to efficient combustion. Having gone thus far, it is logical to prescribe compression by means of a separate machine, in order that the engine mechanism may do only the class of work for which it is best adapted. Combustion at constant pressure during a variable portion of the stroke and expansion during the remainder, as in part of the Diesel cycle, looks attractive, but the introduction of the charge into the cylinder involves several knotty problems."

Percentages of Pounds to a Ton.

Tables for Office Convenience in Calculating Prices of Odd Pounds.

(*With Supplement.*)

The accompanying tables were made up by R. D. Jenkins of the Domhoff & Joyce Company, Cincinnati, Ohio. They will be found useful by those who handle pig iron and other commodities sold by the gross ton. They are practically complete tables of decimals of a ton for odd numbers of pounds. The decimals are given for both the 2240 and 2268 pound ton.

The Bristol Water Level Gauge.

It is often advantageous in hydraulic engineering to automatically register the fluctuations in hight of water in head and tail races, rivers, reservoirs, canals, sewers, forebays, &c. Many devices have been used for this purpose, but in practice troubles have resulted from mechanical complexity, difficulty of installation and the effect of cold weather on the apparatus. These objections have been overcome, it is claimed, in the Bristol water level gauge by using air pressure for transmitting the motion. A double bell casting is located permanently at the lowest point to which the water will fall. Between the halves of the bell a diaphragm of thin sheet rubber is placed, so that the water pressure below compresses the air above; this pressure being transmitted through a flexible copper tube to a recording instrument of the same general form and appearance as the familiar Bristol recording pressure gauges. It is seen, therefore, that all moving parts have been eliminated except the rubber diaphragm, which is permanently located below the freezing point in the water. The recorder may be located at any convenient distance from the water, and can be equipped with either daily or weekly charts of almost any capacity. These recording gauges have also been developed for registering the depth or volume of oil in storage tanks. They are made by the Bristol Company, Waterbury, Conn., and are described in its new bulletin, No. 69.

The Wayne Iron Company's Mining Operations.

The Wayne Iron Company, in which a number of Cleveland men are interested, will soon begin the stripping of some ore property which it controls in Wayne County, New York, with the view of placing ore on the market the coming season. The company has acquired about 600 acres of ore land, and it is estimated that the property will produce from 3,500,000 to 4,000,000 tons of ore. The company expects to be able to get out 1000 tons per day. The property is located about 75 miles from Buffalo, and it is the intention to sell the output to Buffalo, Tonawanda and Hamilton, Ont., furnaces and to some of the Eastern furnaces. The ore runs about 45 per cent. in iron, is non-Bessemer and high in silicon, and furnace tests have shown it to be largely self-fluxing, owing to a high percentage of lime. It contains no manganese and practically no alumina, and it is claimed that it will require no treatment for handling at the furnaces. As the earth capping varies from only 6 to 30 ft. in depth, the property can be opened up cheaply. The Cleveland men most prominently interested in the mining company are Capt. J. H. Bartow, Capt. John Mitchell, W. H. Becker and John A. Donaldson.

POUNDS IN PERCENTAGES OF A TON.

TON OF 2240 POUNDS.

Lbs.	Per Cent.	Lbs.	Per Cent.	Lbs.	Per Cent.	Lbs.	Per Cent.	Lbs.	Per Cent.	Lbs.	Per Cent.	Lbs.	Per Cent.	Lbs.	Per Cent.	Lbs.	Per Cent.	Lbs.	Per Cent.
4	0.17	228	10.2	452	20.2	676	30.2	**900**	40.2	1124	50.2	1348	60.2	1572	70.2	1796	80.2	2020	90.2
8	0.35	232	10.35	456	20.35	680	30.35	904	40.35	1128	50.35	1352	60.35	1576	70.35	**1800**	80.35	2024	90.35
12	0.5	236	10.5	460	20.5	684	30.5	908	40.5	1132	50.5	1356	60.5	1580	70.5	1804	80.5	2028	90.5
16	0.7	240	10.7	464	20.7	688	30.7	912	40.7	1136	50.7	1360	60.7	1584	70.7	1808	80.7	2032	90.7
20	0.9	244	10.9	468	20.9	692	30.9	916	40.9	1140	50.9	1364	60.9	1588	70.9	1812	80.9	2036	90.9
24	1.1	248	11.1	472	21.1	696	31.1	920	41.1	1144	51.1	1368	61.1	1592	71.1	1816	81.1	2040	91.1
28	1.25	252	11.25	476	21.25	**700**	31.25	924	41.25	1148	51.25	1372	61.25	1596	71.25	1820	81.25	2044	91.25
32	1.4	256	11.4	480	21.4	704	31.4	928	41.4	1152	51.4	1376	61.4	**1600**	71.4	1824	81.4	2048	91.4
36	1.6	260	11.6	484	21.6	708	31.6	932	41.6	1156	51.6	1380	61.6	1604	71.6	1828	81.6	2052	91.6
40	1.8	264	11.8	488	21.8	712	31.8	936	41.8	1160	51.8	1384	61.8	1608	71.8	1832	81.8	2056	91.8
44	2.0	268	12.0	492	22.0	716	32.0	940	42.0	1164	52.0	1388	62.0	1612	72.0	1836	82.0	2060	92.0
48	2.15	272	12.15	496	22.15	720	32.15	944	42.15	1168	52.15	1392	62.15	1616	72.15	1840	82.15	2064	92.15
52	2.3	276	12.3	**500**	22.3	724	32.3	948	42.3	1172	52.3	1396	62.3	1620	72.3	1844	82.3	2068	92.3
56	2.5	280	12.5	504	22.5	728	32.5	952	42.5	1176	52.5	**1400**	62.5	1624	72.5	1848	82.5	2072	92.5
60	2.7	284	12.7	508	22.7	732	32.7	956	42.7	1180	52.7	1404	62.7	1628	72.7	1852	82.7	2076	92.7
64	2.85	288	12.85	512	22.85	736	32.85	960	42.85	1184	52.85	1408	62.85	1632	72.85	1856	82.85	2080	92.85
68	3.0	292	13.0	516	23.0	740	33.0	964	43.0	1188	53.0	1412	63.0	1636	73.0	1860	83.0	2084	93.0
72	3.2	296	13.2	520	23.2	744	33.2	968	43.2	1192	53.2	1416	63.2	1640	73.2	1864	83.2	2088	93.2
76	3.4	**300**	13.4	524	23.4	748	33.4	972	43.4	1196	53.4	1420	63.4	1644	73.4	1868	83.4	2092	93.4
80	3.6	304	13.6	528	23.6	752	33.6	976	43.6	**1200**	53.6	1424	63.6	1648	73.6	1872	83.6	2096	93.6
84	3.75	308	13.75	532	23.75	756	33.75	980	43.75	1204	53.75	1428	63.75	1652	73.75	1876	83.75	**2100**	93.75
88	3.9	312	13.9	536	23.9	760	33.9	984	43.9	1208	53.9	1432	63.9	1656	73.9	1880	83.9	2104	93.9
92	4.1	316	14.1	540	24.1	764	34.1	988	44.1	1212	54.1	1436	64.1	1660	74.1	1884	84.1	2108	94.1
96	4.3	320	14.3	544	24.3	768	34.3	992	44.3	1216	54.3	1440	64.3	1664	74.3	1888	84.3	2112	94.3
100	4.45	324	14.45	548	24.45	772	34.45	996	44.45	1220	54.45	1444	64.45	1668	74.45	1892	84.45	2116	94.45
104	4.6	328	14.6	552	24.6	776	34.6	**1000**	44.6	1224	54.6	1448	64.6	1672	74.6	1896	84.6	2120	94.6
108	4.8	332	14.8	556	24.8	780	34.8	1004	44.8	1228	54.8	1452	64.8	1676	74.8	**1900**	84.8	2124	94.8
112	5.0	336	15.0	560	25.0	784	35.0	1008	45.0	1232	55.0	1456	65.0	1680	75.0	1904	85.0	2128	95.0
116	5.2	340	15.2	564	25.2	788	35.2	1012	45.2	1236	55.2	1460	65.2	1684	75.2	1908	85.2	2132	95.2
120	5.35	344	15.35	568	25.35	792	35.35	1016	45.35	1240	55.35	1464	65.35	1688	75.35	1912	85.35	2136	95.35
124	5.5	348	15.5	572	25.5	796	35.5	1020	45.5	1244	55.5	1468	65.5	1692	75.5	1916	85.5	2140	95.5
128	5.7	352	15.7	576	25.7	**800**	35.7	1024	45.7	1248	55.7	1472	65.7	1696	75.7	1920	85.7	2144	95.7
132	5.9	356	15.9	580	25.9	804	35.9	1028	45.9	1252	55.9	1476	65.9	**1700**	75.9	1924	85.9	2148	95.9
136	6.1	360	16.1	584	26.1	808	36.1	1032	46.1	1256	56.1	1480	66.1	1704	76.1	1928	86.1	2152	96.1
140	6.25	364	16.25	588	26.25	812	36.25	1036	46.25	1260	56.25	1484	66.25	1708	76.25	1932	86.25	2156	96.25
144	6.4	368	16.4	592	26.4	816	36.4	1040	46.4	1264	56.4	1488	66.4	1712	76.4	1936	86.4	2160	96.4
148	6.6	372	16.6	596	26.6	820	36.6	1044	46.6	1268	56.6	1492	66.6	1716	76.6	1940	86.6	2164	96.6
152	6.8	376	16.8	**600**	26.8	824	36.8	1048	46.8	1272	56.8	1496	66.8	1720	76.8	1944	86.8	2168	96.8
156	7.0	380	17.0	604	27.0	828	37.0	1052	47.0	1276	57.0	**1500**	67.0	1724	77.0	1948	87.0	2172	97.0
160	7.1	384	17.1	608	27.1	832	37.1	1056	47.1	1280	57.1	1504	67.1	1728	77.1	1952	87.1	2176	97.1
164	7.3	388	17.3	612	27.3	836	37.3	1060	47.3	1284	57.3	1508	67.3	1732	77.3	1956	87.3	2180	97.3
168	7.5	392	17.5	616	27.5	840	37.5	1064	47.5	1288	57.5	1512	67.5	1736	77.5	1960	87.5	2184	97.5
172	7.7	396	17.7	620	27.7	844	37.7	1068	47.7	1292	57.7	1516	67.7	1740	77.7	1964	87.7	2188	97.7
176	7.85	**400**	17.85	624	27.85	848	37.85	1072	47.85	1296	57.85	1520	67.85	1744	77.85	1968	87.85	2192	97.85
180	8.0	404	18.0	628	28.0	852	38.0	1076	48.0	**1300**	58.0	1524	68.0	1748	78.0	1972	88.0	2196	98.0
184	8.2	408	18.2	632	28.2	856	38.2	1080	48.2	1304	58.2	1528	68.2	1752	78.2	1976	88.2	**2200**	98.2
188	8.4	412	18.4	636	28.4	860	38.4	1084	48.4	1308	58.4	1532	68.4	1756	78.4	1980	88.4	2204	98.4
192	8.6	416	18.6	640	28.6	864	38.6	1088	48.6	1312	58.6	1536	68.6	1760	78.6	1984	88.6	2208	98.6
196	8.75	420	18.75	644	28.75	868	38.75	1092	48.75	1316	58.75	1540	68.75	1764	78.75	1988	88.75	2212	98.75
200	8.9	424	18.9	648	28.9	872	38.9	1096	48.9	1320	58.9	1544	68.9	1768	78.9	1992	88.9	2216	98.9
204	9.1	428	19.1	652	29.1	876	39.1	**1100**	49.1	1324	59.1	1548	69.1	1772	79.1	1996	89.1	2220	99.1
208	9.3	432	19.3	656	29.3	880	39.3	1104	49.3	1328	59.3	1552	69.3	1776	79.3	**2000**	89.3	2224	99.3
212	9.5	436	19.5	660	29.5	884	39.5	1108	49.5	1332	59.5	1556	69.5	1780	79.5	2004	89.5	2228	99.5
216	9.65	440	19.65	564	29.65	888	39.65	1112	49.65	1336	59.65	1560	69.65	1784	79.65	2008	89.65	2232	99.65
220	9.8	444	19.8	668	29.8	892	39.8	1116	49.8	1340	59.8	1564	69.8	1788	79.8	2012	89.8	2236	99.8
224	10.0	448	20.0	672	30.0	896	40.0	1120	50.0	1344	60.0	1568	70.0	1792	80.0	2016	90.0	2240	100.00

POUNDS IN PERCENTAGES OF A TON.

TON OF 2268 POUNDS.

Lbs.	Per Cent.	Lbs.	Per Cent.	Lbs.	Per Cent.	Lbs.	Per Cent.	Lbs.	Per Cent.	Lbs.	Per Cent.	Lbs.	Per Cent.	Lbs.	Per Cent.	Lbs.	Per Cent.	Lbs.	Per Cent.
4	0.2	232	10.2	456	20.1	680	30.0	908	40.0	1136	50.1	1360	60.0	1588	70.0	1816	80.1	2044	90.1
8	0.4	236	10.4	460	20.3	684	30.2	912	40.2	1140	50.3	1364	60.1	1592	70.2	1820	80.25	2048	90.3
12	0.5	240	10.6	464	20.5	688	30.4	916	40.4	1144	50.4	1368	60.3	1596	70.4	1824	80.4	2052	90.5
16	0.7	244	10.8	468	20.6	692	30.6	920	40.6	1148	50.6	1372	60.5	**1600**	70.55	1828	80.6	2056	90.65
20	0.9	248	10.9	472	20.8	696	30.7	924	40.7	1152	50.8	1376	60.7	1604	70.7	1832	80.8	2060	90.8
24	1.1	252	11.1	476	21.0	**700**	30.9	928	40.9	1156	51.0	1380	60.85	1608	70.9	1836	80.95	2064	91.0
28	1.2	256	11.3	480	21.2	704	31.0	932	41.1	1160	51.15	1384	61.0	1612	71.1	1840	81.1	2068	91.2
32	1.4	260	11.5	484	21.3	708	31.2	936	41.3	1164	51.3	1388	61.2	1616	71.25	1844	81.3	2072	91.4
36	1.6	264	11.6	488	21.5	712	31.4	940	41.45	1168	51.5	1392	61.4	1620	71.4	1848	81.5	2076	91.5
40	1.8	268	11.8	492	21.7	716	31.6	944	41.6	1172	51.7	1396	61.55	1624	71.6	1852	81.7	2080	91.7
44	1.9	272	12.0	496	21.9	720	31.7	948	41.8	1176	51.85	**1400**	61.7	1628	71.8	1856	81.8	2084	91.9
48	2.1	276	12.2	**500**	22.0	724	31.9	952	42.0	1180	52.0	1404	61.9	1632	72.0	1860	82.0	2088	92.1
52	2.3	280	12.3	504	22.2	728	32.1	956	42.15	1184	52.2	1408	62.1	1636	72.1	1864	82.2	2092	92.2
56	2.5	284	12.5	508	22.4	732	32.3	960	42.3	1188	52.4	1412	62.3	1640	72.3	1868	82.4	2096	92.4
60	2.6	288	12.7	512	22.6	736	32.45	964	42.5	1192	52.6	1416	62.4	1644	72.5	1872	82.5	**2100**	92.6
64	2.8	292	12.9	516	22.75	740	32.6	968	42.7	1196	52.7	1420	62.6	1648	72.7	1876	82.7	2104	92.8
68	3.0	296	13.05	520	22.9	744	32.8	972	42.85	**1200**	52.9	1424	62.8	1652	72.8	1880	82.9	2108	92.95
72	3.2	**300**	13.2	524	23.1	748	33.0	976	43.0	1204	53.1	1428	63.0	1656	73.0	1884	83.1	2112	93.1
76	3.3	304	13.4	528	23.3	752	33.2	980	43.2	1208	53.3	1432	63.1	1660	73.2	1888	83.25	2116	93.3
80	3.5	308	13.6	532	23.45	756	33.3	984	43.4	1212	53.4	1436	63.3	1664	73.4	1892	83.4	2120	93.5
84	3.7	312	13.8	536	23.6	760	33.5	988	43.6	1216	53.6	1440	63.5	1668	73.55	1896	83.6	2124	93.65
88	3.9	316	13.9	540	23.8	764	33.7	992	43.7	1220	53.8	1444	63.7	1672	73.7	**1900**	83.8	2128	93.8
92	4.1	320	14.1	544	24.0	768	33.9	986	43.9	1224	54.0	1448	63.85	1676	73.9	1904	83.95	2132	94.0
96	4.2	324	14.3	548	24.2	772	34.0	**1000**	44.1	1228	54.15	1452	64.0	1680	74.1	1908	84.1	2136	94.2
100	4.4	328	14.5	552	24.3	776	34.2	1004	44.3	1232	54.3	1456	64.2	1684	74.25	1912	84.3	2140	94.35
104	4.6	332	14.6	556	24.5	780	34.4	1008	44.4	1236	54.5	1460	64.4	1688	74.4	1916	84.5	2144	94.5
108	4.8	336	14.8	560	24.7	784	34.6	1012	44.6	1240	54.7	1464	64.55	1692	74.6	1920	84.65	2148	94.7
112	4.9	340	15.0	564	24.9	788	34.7	1016	44.8	1244	54.85	1468	64.7	1696	74.8	1924	84.8	2152	94.9
116	5.1	344	15.2	568	25.0	792	34.9	1020	45.0	1248	55.0	1472	64.9	**1700**	75.0	1928	85.0	2156	95.1
120	5.3	348	15.3	572	25.2	796	35.1	1024	45.15	1252	55.2	1476	65.1	1704	75.1	1932	85.2	2160	95.2
124	5.5	352	15.5	576	25.4	**800**	35.3	1028	45.3	1256	55.4	1480	65.25	1708	75.3	1936	85.4	2164	95.4
128	5.6	356	15.7	580	25.6	804	35.4	1032	45.5	1260	55.55	1484	65.4	1712	75.5	1940	85.5	2168	95.6
132	5.8	360	15.9	584	25.75	808	35.6	1036	45.7	1264	55.7	1488	65.6	1716	75.7	1944	85.7	2172	95.8
136	6.0	364	16.05	588	25.9	812	35.8	1040	45.85	1268	55.9	1492	65.8	1720	75.8	1948	85.9	2176	95.9
140	6.2	368	16.2	592	26.1	816	36.0	1044	46.0	1272	56.1	1496	66.0	1724	76.0	1952	86.1	2180	96.1
144	6.3	372	16.4	596	26.3	820	36.15	1048	46.2	1276	56.3	**1500**	66.1	1728	76.2	1956	86.2	2184	96.3
148	6.5	376	16.6	**600**	26.45	824	36.3	1052	46.4	1280	56.4	1504	66.3	1732	76.4	1960	86.4	2188	96.5
152	6.7	380	16.75	604	26.6	828	36.5	1056	46.6	1284	56.6	1508	66.5	1736	76.5	1964	86.6	2192	96.65
156	6.9	384	16.9	608	26.8	832	36.7	1060	46.7	1288	56.8	1512	66.7	1740	76.7	1968	86.8	2196	96.8
160	7.0	388	17.1	612	27.0	836	36.9	1064	46.9	1292	57.0	1516	66.8	1744	76.9	1972	86.95	**2200**	97.0
164	7.2	392	17.3	616	27.2	840	37.0	1068	47.1	1296	57.1	1520	67.0	1748	77.1	1976	87.1	2204	97.2
168	7.4	396	17.5	620	27.3	844	37.2	1072	47.3	**1300**	57.3	1524	67.2	1752	77.25	1980	87.3	2208	97.35
172	7.6	**400**	17.6	624	27.5	848	37.4	1076	47.4	1304	57.5	1528	67.4	1756	77.4	1984	87.5	2212	97.5
176	7.8	404	17.8	628	27.7	852	37.6	1080	47.6	1308	57.7	1532	67.55	1760	77.6	1988	87.65	2216	97.7
180	7.9	408	18.0	632	27.9	856	37.7	1084	47.8	1312	57.85	1536	67.7	1764	77.8	1992	87.8	2220	97.9
184	8.1	412	18.2	636	28.0	860	37.9	1088	48.0	1316	58.0	1540	67.9	1768	77.95	1996	88.0	2224	98.1
188	8.3	416	18.3	640	28.2	864	38.1	1092	48.15	1320	58.2	1544	68.1	1772	78.1	**2000**	88.2	2228	98.2
192	8.5	420	18.5	644	28.4	868	38.3	1096	48.3	1324	58.4	1548	68.25	1776	78.3	2004	88.4	2232	98.4
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204	9.0	432	19.05	656	28.9	880	38.8	1108	48.85	1336	58.9	1560	68.8	1788	78.8	2016	88.9	2244	98.95
208	9.2	436	19.2	660	29.1	884	39.0	1112	49.0	1340	59.1	1564	69.0	1792	79.0	2020	89.1	2248	99.1
212	9.35	440	19.4	664	29.3	888	39.15	1116	49.2	1344	59.3	1568	69.1	1796	79.2	2024	89.2	2252	99.3
216	9.5	444	19.6	668	29.45	892	39.3	1120	49.4	1348	59.4	1572	69.3	**1800**	79.4	2028	89.4	2256	99.5
220	9.7	448	19.75	672	29.6	896	39.5	1124	49.55	1352	59.6	1576	69.5	1804	79.5	2032	89.6	2260	99.7
224	9.9	452	19.9	676	29.8	**900**	39.7	1128	49.7	1356	59.8	1580	69.7	1808	79.7	2036	89.8	2264	99.85
228	10.05	454	20.0	678	29.9	904	39.9	1132	49.9	1358	59.9	1584	69.8	1812	79.9	2040	89 95	2268	100.00

The Philadelphia Weight Conference.

Foundrymen Meet Pig Iron, Coke and Railroad Interests.

An invitation was extended by the New England Foundrymen's Weight Committee to producers and shippers of pig iron, coal and coke to meet and, in a friendly spirit, consider means as how best to overcome discrepancies in the delivery weight of these crude materials. In accordance with this invitation a conference between the representatives of the New England, Philadelphia and Pittsburgh foundrymen's associations, the producers and the transportation companies was held at the Bellevue-Stratford Hotel, Philadelphia, Pa., February 5. Stanley G. Flagg, Jr., president of the American Foundrymen's Association, called the meeting to order shortly after 10 o'clock, welcoming those in attendance and expressing the hope that their deliberations would result in the adoption of some method by which the differences in the weight matter might be adjusted to the mutual satisfaction of those interested. On motion of W. A. Viall, secretary of the Brown & Sharpe Mfg. Company, Henry A. Carpenter of Providence, R. I., was elected as the chairman of the conference. Wm. J. Breen, secretary of the Weight Committee of the New England Foundrymen's Association, was elected secretary. Mr. Carpenter then addressed the conference as follows:

Chairman Carpenter's Address.

You are all sufficiently familiar with the purpose for which we are called together, and without endeavoring to outline the case from the foundrymen's standpoint, it will be my desire to hear from the different interests which are represented here, with the object that after all sides of the question have been discussed by parties directly interested it will be possible to agree upon some resolution establishing a method which will eliminate to a large extent the friction which now exists between buyers, sellers and transportation companies.

If I should attempt to read the reports that have been made by the original committee appointed by the New England Foundrymen's Association, or to pick out of the letters received many which have a bearing on this particular subject, it would consume the rest of the day, and it seems as though this could be left out, as I think it is thoroughly understood, and will be agreed to by every one here, that the foundrymen have sufficient cause to complain.

As foundrymen we feel that the iron and coke producers are as a rule large corporations. This also applies in a greater degree to the transportation companies, and, as is almost always the case, the small individual foundrymen, after having brought cases to the attention of these large corporations and having been turned down or ignored, feels as though he was powerless to do anything. I am a firm believer in organization and its results. When organizations are properly handled they are usually beneficial, and there is some doubt that if our New England Foundrymen's Association had not taken the initiative this subject might not have been brought up and this meeting called.

I firmly believe that at this meeting the very fact of our being together and allowing the representatives of the small foundrymen to come in contact and become personally acquainted with the representatives of these larger corporations will tend to do much toward straightening out difficulties of the nature we have under consideration when they arise, and I am in hope that ways and means will be suggested which will eliminate to a large extent, as stated before, the frequent occurrence of shortages.

In the majority of the letters which the committee has received from foundrymen it seems to be a universal complain that they are compelled to buy their coke with railroad weights at point of shipment governing, and it would seem that the very least we could accomplish would be to establish a method of weighing which would prove accurate and agree upon payments according to weights at point of delivery. Some of the communications we receive speak harshly of the producers as well as the railroads, and indicate that after a foundryman has instituted regular methods and appliances for checking the receipts of his raw materials the shortages have been reduced and even done away with.

I do not believe, as a rule, that this opinion is coincided in by foundrymen in general. I am sure that your chairman has no such idea, but our correspondence indicates that methods in some localities at point of shipment are lax; in some cases that the tare weight as indicated on cars is incorrect. It is often the case that cars are weighed without being uncoupled, which does not tend to accuracy, and in other instances, where the load is transferred during shipment, that the course pursued is lax and inadequate. In many cases our records would indicate that when a foundryman asks for his rights that he meets at times with scant courtesy on the part of the transportation companies and from the sellers as well.

The New England Weight Committee's Efforts.

The chairman called upon J. L. Anthony, chairman of the New England Weight Committee, for an outline of that committee's labors. Mr. Anthony responded as follows:

This committee was appointed in March, 1907, to ascertain, if possible, if consignments of pig iron and coke to New England arrived at destination with loss of more or less material than billed by the shippers, and where shortage was found, were the consignees fully reimbursed. The committee, after careful investigation, became convinced that many consumers throughout New England had suffered considerable loss through not having received the full amount of the material billed, particularly pig iron coming by rail and water from the South.

Convincing proof of shortages of any magnitude in consignments of pig iron shipped by rail in box cars was rare, while shipments in open cars were frequently found short, especially during the latter part of 1906 and the early months of 1907. Shortages of coke appeared very prevalent, amounting in many instances to nearly 2 per cent. on large shipments covering a considerable period.

General dissatisfaction was found to exist among consignees on account of the difficulty experienced in collecting claims for shortage. No uniform method of procedure on the part of consignees was found operative that would establish a claim that either shipper or carrier would willingly entertain. Claims made on the shippers were usually met with the assumption on their part that their weights were correct and the shortage must be due to loss in the hands of the carrier. The delivering transportation company usually questioned the accuracy of the shippers' or the consignees' weights or shifted the responsibility to their connections.

The question was, therefore, taken up with the shippers and delivery carriers, requesting a statement from each which would enlighten this committee as to what they required of the consignee to establish a claim of shortage for which they would assume responsibility. This brought from the pig iron shippers a concise description of their methods of and equipment for weighing, as evidence of the care taken to insure accuracy, and also the statement that the carriers accepted their weights for the billing, and if any part of the iron did not arrive at destination it must have been lost in transit while in the hands of the carrier.

From the coke shippers we learn that cars of coke are generally weighed by the initial railroad, coupled together and run over track scales, often miles from the ovens where loaded, and the marked tare weight on the cars is used in calculating the net. They usually took the position that as the railroad weighs the coke it was evident that if the destination weights did not agree with the original weights material had either been lost in transit or improperly weighed, conditions over which they had no control.

The replies of shippers generally imply that consignees should look to transportation companies for reimbursement. No definite statement being obtained from the carriers regarding their position, it was decided to request a conference with the shippers and carriers for the friendly discussion of this question. This suggestion or request was received with favor in nearly every case, and the conference has accordingly been called by this committee at this time and place.

The Situation as to Pittsburgh and Philadelphia.

Herbert E. Field, president of the Pittsburgh Foundrymen's Association, represented that organization at the conference, and said that he represented both shippers and consumers, as a number of both classes are members of that association. He had received a large amount of data on both sides of the question, which could be presented in full if the conference desired. Shortages were far greater on pig iron in the Pittsburgh District than they were on coke, and he would like to see the conference adopt some plan by which these differences in shipping and delivery weights could be overcome. A system of restricted check weighing might accomplish something, but rather than go into details at the time, he would consider it a better plan to discuss the different subjects as they arose during the conference.

The Weight Committee of the Philadelphia Foundrymen's Association reported through its secretary, A. A. Miller, that the matter had been fully discussed in the meetings of the association and by personal interviews with foundrymen. Discrepancies in pig iron weights, it

was found, did exist in this territory, and while all rail and short haul deliveries usually come through satisfactorily, those dependent on mixed or rail and water shipment are to a great extent unsatisfactory. On the coke question reports varied. Some consumers did not weigh the material on arrival, while others after a period of weighing discontinued it and assumed that shortages would average up with the overweights. Statistics in instances showed that small losses, which were disregarded, were the usual result when records on coke weights were kept.

Coke First Taken Up.

The question of the shortage on delivered weight of coke was first taken up by the conference, and the discussion covered practically the entire morning session. It was asked if any definite percentage could be fixed for loss of weight due to evaporation of moisture in transit, rough handling or any other usual cause. Shipments weighed by responsible parties showed unquestionably from the foundrymen's standpoint that shortages did exist, and it was asked that the transportation companies explain if possible why discrepancies between the shipped and delivered weight should not be eliminated. Coke purchases, it was said, were made under agreement which definitely stated that weights by the railroad at scales nearest the ovens should govern the basis of settlement for the coke, so that the purchasers had no redress from the coke producers, notwithstanding the fact that the delivered weight was short; but not only were they made to assume the burden of loss of material, but they were also compelled to pay the freight on material they did not receive, and in the case of coke the freight to New England points exceeded the actual cost of the coke at the ovens.

The representatives of the railroad interests in turn explained the care with which shipments of coke were weighed, it being stated that this matter had been given the most careful attention. Their scales were the best to be had, self-registering, so as to preclude human error. Scales were frequently and regularly tested and checked, and every possible effort made to keep them correct. The weights made were for the purpose of fixing the basis of their freight accounts, and if the shippers of coke saw fit to make these weights the basis of settlement between themselves and the purchasers of coke it was something beyond their control. Offers were made by several of the railroad interests to take a committee of foundrymen to their weighing points in the coke regions, and there to show them the methods followed and the care exercised in arriving at absolutely correct weights.

Railroads Do Not Admit Discrepancies in Coke.

Efforts were made by the representatives of the foundrymen to have the railroad interests explain what would constitute a valid claim on which the railroads would be willing to settle for shortages, but without result, as the latter interest would not admit that any discrepancies in the weights existed, as it was claimed that no better system than was used by themselves had yet been brought out, and until there was they were willing to stand on their own weights. Discrepancies of a few hundred pounds, it was said, were possible on different scales and could not be termed a shortage, but on heavy tonnages, where errors were obvious, settlement was always made as rapidly as possible. Coke cars, it was said, were not cleaned either by consumer, shipper or by the transportation companies, and loss in weight from the dust or coke breeze accumulating in the cars was not infrequent. Some consumers used this material for purposes around the plant, under boilers, &c., but as a rule it was usually disregarded.

The question was asked by W. S. Hallowell, "Will the coke producers accept, as the billing price of coke, the net weight of such coke obtained by weighing on reliable scales located nearest to the point of delivery," which brought out considerable discussion. The railroad interest contended that to adopt such a method would change the entire system of the railroad, inasmuch as weighing yards or points would have to be established all over the country and the business of the railroads would be hampered to such an extent as to make it impossible. The morning session adjourned during the discussion of a further resolution, as follows:

Whereas, There are discrepancies between the shipping and out turn weights of coke and pig iron;

Resolved, That the initial, intermediate and delivering transportation companies be requested to appoint a committee to meet with a committee of representtative foundrymen to settle upon a plan that will entitle the consignee to make a claim that will be approved by the transportation companies.

The railroad interests objected to the wording of the resolution.

Pig Iron Weights.

The afternoon session of the conference was called to order by the chairman at 2.30 o'clock, and discussion opened on the resolution presented at the close of the morning session. Action was deferred, however, to permit a discussion of shortages pertaining to pig iron weights, which had not been taken up to any extent during the opening session. A representative from Boston, Mass., explained his company's method of weighing, stating that it was its practice to weigh incoming materials on a regularly tested track scale, by a representative of the railroad and the company jointly, and the weight thus obtained sworn to, but said that this did not appear to be considered a valid claim for shortage, as it was the custom of the railroad to refer the matter back to the originating road, which usually stood firmly on its original weight.

Pig iron producers said that they used every precaution in the weighing of pig iron at their furnaces, check and double checks being in some cases used. The best appliances were used for weighing; scales were frequently tested, in many instances by railroad test cars, and the railroads themselves were willing to accept their weights to base their freight charges. Under ordinary conditions an error of 1 per cent. between shipper's and receiver's scales was possible, and statements were made which brought out under and over weights amounting to between 1 and 2 per cent. on the year's pig iron receipts.

Rail shipments were not as liable to error, it was said, as were rail and water shipments; in fact, statements were made where Southern iron, shipped in box cars which were sealed, as is the custom in some parts of the South, arrived at their New England destinations with the seals intact and consequently without loss, while iron shipped in open cars frequently showed a loss in weight on arrival at their destination. The loss on mixed, or rail and water, shipments was said to be the greatest. In explanation of this apparent discrepancy a representative of one of the water transportation companies explained the care it exercised in keeping the shipments separated at receiving points, in transit and at delivery points. Pigs were identified by paint marks and in some instances counted, but the latter case was not considered reliable, owing to the fact that pigs might be broken by handling in transit. Moderate discrepancies, it was contended were frequently due to the loss of sandage, while the inaccuracy of weighing by short drafts, which was the usual method of weighing in many instances, was frequently a cause of a large part of the shortage in weight claimed.

In the interest of the foundrymen it was said that efforts had been repeatedly made to have the steamship companies install scales at the docks, even at the expense of the foundrymen, but this, it was said by the steamship companies, was impossible owing to the lack of facilities to install large scales at the docks, and which would also greatly interfere with the rapid handling of freight as is required in the conduct of their business.

An Acceptable Resolution.

After some further discussion of a general nature the following committee was, on motion, appointed by the chairman to draft a resolution which would be acceptable to the various interests represented: W. A. Viall, Brown & Sharpe Mfg. Company, Providence, R. I.; R. H. Large, coal freight agent Pennsylvania Railroad, Philadelphia; C. S. Hoskins, Merchants' & Miners' Transportation Company, Baltimore; L. E. Walters, Clare Coke Company, Pittsburgh; H. L. Haldeman, Pulaski Iron Company, Pulaski, Va.; John O. Henshaw, N. S. Bartlett & Co.,

Boston, Mass. This committee, after deliberation, presented a resolution, which after amendment was passed as follows:

Resolved, That a committee be appointed by the chairman, consisting of representatives of the consignors, transportation companies and consignees, to consider the question of discrepancies between shipping and out turned weights on pig iron and coke, and report back in writing to the chairman of this conference.

Owing to the inability to obtain some of the names of transportation companies not represented at the meeting, but who on account of their geographical location are interested in this matter and should be represented on the committee, the chairman deferred appointment of the committee until a later date.

The conference extended a vote of thanks to the presiding officer, immediately after which adjournment followed. The following members of the various foundrymen's weight committees and representatives of the transportation companies and the shippers were in attendance at the conference:

Walter Wood, R. D. Wood & Co.
Sanley G. Flagg, Jr., Stanley G. Flagg Company.
J. S. Stillman, Empire Steel & Iron Company.
W. H. Stanford, Tennessee Coal, Iron & Railroad Company.
Edgar S. Cook, Warwick Iron & Steel Company.
B. F. Fackenthal, Jr., Thomas Iron Company.
J. G. Miller, Adrian Furnace Company.
Ledyard Heckscher, Richard Heckscher Sons Company.
W. W. Hearne, Alabama Consolidated Coal & Iron Company.
Lawrence E. Walters, Clare Coke Company.
J. A. Bradbury, district manager Southern Weighing & Inspection Bureau, Birmingham, Ala.
R. W. Davis, freight traffic manager Buffalo, Rochester & Pittsburgh Railway Company.
C. S. Hoskins, Merchants' & Miners' Transportation Company, Baltimore & Ohio Railroad Company.
W. S. Battle, Jr., general claim agent Norfolk & Western Railway Company.
J. L. Anthony, Weir Stove Company.
William J. Breen, H. W. Adams & Son, Inc.
W. A. Viall, Brown & Sharpe Mfg. Company.
A. N. Abbe, American Hardware Corporation.
Henry A. Carpenter, General Fire Extinguisher Company.
Leonard Peckett, Empire Steel & Iron Company.
Jno. O. Henshaw, N. S. Bartlett & Co.
J. B. Wadsworth, Corrigan, McKinney & Co.
R. S. Lackey, Allegheny Ore & Iron Company.
Philip E. Wright, Thomas Iron Company.
Theo. F. Lips, Merchants' & Miners' Transportation Company, Baltimore & Ohio.
O. W. Mason, Midland Steel Company.
C. F. Lamb, general agent Southern Railway Company.
T. W. Roberts, Jamison Coal & Coke Company.
S. G. Cargill, Low Moor Iron Company.
C. H. Newcomb, Crocker Bros. and Rockhill Furnace Company.
Warren W. Baker, Carnegie Steel Company.
August A. Miller, *The Iron Age,* Philadelphia.
J. B. Halloway, N. S. Bartlett & Co.
H. E. Bear, S. G. Flagg & Co.
Bartlett M Shaw, Walker & Pratt Mfg. Co.
Jno. A. Penton, *Iron Trade Review.*
C. A. Swope, Eastern freight agent, Louisville & Nashville Railroad Company.
Abel Mishler, Davis Coal & Coke Company.
R. H. Large, coal freight agent, Pennsylvania Railroad.
Edward H. Bell, freight traffic department, New York Central & Hudson River Railroad.
Wm. T. Shepard, Tonawanda Iron & Steel Company and Punxutawney Iron Company.
Horace L. Haldeman, Pulaski Iron Company.
W. H. Hunt, Wm. Adams Foundry Company.
Wm. S. Hallowell, Harrison Safety Boiler Works.
Robt. C. Wright, general freight agent, Pennsylvania Railroad.
F. E. Herriman, Central Lines, New York.
E. B. Crosley, coal freight agent, Pennsylvania & Reading Railway.
L. E. Snively, commercial agent, Delaware, Lackawanna & Western Railroad.
A. R. Gilbert, assistant general freight agent, Cleveland & Pittsburgh Railway Company.
H. M. Matthews, Baltimore & Ohio Railroad.
Hugh Kennedy, Buffalo & Susquehanna Iron Company.
H. E. Field, Mackintosh-Hemphill & Co.
Geo. W. French, J. J. Mohr & Co.
G. K. Mohr, J. J. Mohr & Co.
Thos. M. Eynon, Eynon-Evans Mfg. Company.

After an investigation of the coal resources of the Philippines, Government geologists report that a large vein probably crosses the entire group of islands; it has been clearly traced in one vicinity for fully 25 miles. The coal is found to be a uniformly good bituminous. Mine workings which had been extensively operated by the Spaniards were discovered.

Fuels for Gas and Gasoline Engines.

BY AMOS HARDY.

Gasoline.

The specific gravity of gasoline and the time required to volatilize it affect the running of the engine, as well as the ease with which it can be started, especially in a cold climate. A simple test for volatility consists in moistening the hand with it and noting the time it takes to evaporate. Stove gasoline, commercially known as 74 test, which is commonly used in engines, evaporates in about 7 to 10 sec., leaving the surface of the hand perfectly dry. Gasoline of 60 degrees Baumé requires from ¼ to ½ min. to evaporate. If there is any greasy residue left on the hand the fuel is not fit for use in the ordinary gasoline engine.

The instrument used to test the specific gravity of gasoline, the hydrometer, consists of a glass tube closed at both ends, containing a quantity of mercury, with a bulb at the bottom and having a degree graduation known as the Baumé scale.

Liquid fuels of lower specific gravity, down to 56 degrees may be used successfully in the ordinary gasoline engine, although it may become necessary to heat the air before it is brought into contact with the fuel. This can be done readily by inclosing the exhaust pipe with a sheet iron cylinder 1 to 2 in. larger in diameter than the pipe, and connecting the air supply pipe to this cylinder. For starting the engine on low grade fuels when it is cold, it may be necessary to use gasoline for a few minutes, until the engine has warmed up sufficiently to allow the heavier fuel to be vaporized. The design of the fuel admission device may have considerable effect on the way in which a low grade fuel can be used. A number of gasoline engines as now built can use 56 degree-distillate, even for starting at moderate temperature, without the necessity of heating the air.

Illuminating Gas.

When using illuminating gas, owing to the uniform quality and steady pressure with which it is usually supplied, few difficulties encountered in the operation of a gas engine may properly be blamed on the fuel. It must be remembered, however, that to obtain the best results of which the engine is capable, the adjustment of the amount of gas and air in an engine depends on the heating value of the gas in each locality. The engine may have been adjusted properly in this respect in the factory, but when set up under different conditions and using a fuel different from that with which it was tested, the proportions of gas and air may have to be varied. This can usually be accomplished by means of the gas cock or throttle on the engine. The opening in the plug of this cock must be large enough to admit a sufficient supply of gas at the lowest pressure during the day, with the cock fully opened. Slight fluctuations in pressure are not liable to affect the running of an engine to any great extent, as the pressure regulator in the supply pipe, or the rubber bag, take care of such variations in pressure.

Natural Gas.

Few gas engine factories have natural gas available, and the engines are therefore tested with illuminating gas, which usually contains only about two-thirds of the heat value of natural gas. Therefore an engine adjusted for artificial gas must be differently adjusted for the richer fuel. As it requires only 12 to 15 cu. ft. of natural gas to produce 1 hp. per hour, as against 18 to 20 cu. ft. of illuminating gas, the gas supply must be reduced 25 to 33 1-3 per cent. Without this change of adjustment the power developed would be considerably less than it should be, owing to the excess of gas in the mixture.

A mixture of air and natural gas also burns more sluggishly than a mixture containing illuminating gas. This necessitates a different adjustment of the igniter. The proper point of ignition—that is the position of the crankshaft at which the electrodes separate and produce the igniting spark—will be found to be about 4 to 6 degrees earlier than is suitable for illuminating gas.

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Legislative Control of Business.

Radical laws are often nullified by the courts because in conflict with the written constitution, but once a law has been sustained by the courts they are bound to enforce it forever, regardless of changes that may occur in the conditions that led to its enactment. Few laws are repealed, and each year a large addition is made to the accumulation of generations. In the United States the popular demand for more and more laws must be obeyed by Congress, 46 legislatures, the various commissions and boards which exercise legislative powers, and the multitude of municipal bodies which have local jurisdiction. In recent years law making has taken the direction of regulating the minute affairs of business, and it is difficult to foresee the outcome.

The great railroad president goes about in fear and trembling, not knowing at what moment the hand of the law may beckon him to account for some act in which he was innocent of wrong intent; and the same fear haunts all his employees, from traffic managers and superintendents down to the station agent who works for $40 per month. Laws which regulate the physical movement of traffic as well as the rates and financial affairs of a railroad have become so complex that it is impossible for the official or employee to know in all cases whether his acts are proper or unlawful. Experience and business ability offer no assurance that an act is right, and even an expert lawyer cannot tell in many cases what a court might decide in the interpretation of recent laws which it is physically impossible to obey.

The manufacturer is confronted with a multitude of laws which regulate the amount of smoke his chimney may emit, the conditions under which his men may work, and the manner in which he shall or shall not fix the prices of his products. All of these requirements, many of them necessary and salutary, are coupled with varying penalties of fines or imprisonment. The manufacturer must furthermore master the impossible by knowing the lawful rates on every article that he receives or ships, under dire penalties if he pays more or less than the complex and often invisible schedules which have been clothed with the sanctity of law. The merchant, in the same manner, is hedged about by laws and restrictions, which in the State of Texas have made it a felony if he deals in the products of a mysterious class of corporations that for all he knows may include the majority or all of the manufacturers whose goods he sells. The maker of food products may have his reputation blasted in a day by the summary seizure of his goods by Government officials on technical charges, where he has earnestly sought to obey the law. The packer has fallen so far from popular favor that he is not permitted to sell his products until they have been "inspected and passed" by representatives of the law.

The scope and severity of laws to regulate business affairs have vastly increased within a few years, and if the growth of legislation continues it will be a comparatively short time until every man who conducts an industry or business will be technically, at least, a law breaker. Even now few companies carrying on a manufacturing business of any magnitude can comply literally with all the requirements of legislation. The majority of the men who make laws to regulate business affairs have had little or no experience in bearing the responsibility of industrial or commercial undertakings, and scarce one in a hundred of the masters of the ballot knows what will be the ultimate effect of the laws they demand.

When the English Parliament found itself in possession of the power to regulate the business affairs of an entire nation it prescribed the most minute laws to fix wages, the prices of grain and other commodities, and the ordinary methods of business, and the failure of one law only led to more stringent measures. Wages advanced in defiance of these laws, and the prices of commodities showed little inclination to obey legislative decrees; but for five centuries Parliament continued to fulminate on the ordinary affairs of business. Meantime England remained in a commercial and industrial rank inferior to that of Holland and the petty republics of Italy, and it was not until the mass of feudal legislation had reached the stage of decay that the English people were able to assert themselves in the world's trade. In the course of six centuries Parliament made the discovery that business affairs largely regulate themselves, in obedience to the desire of the majority of business men for fair dealing.

In the United States the wave of regulation and reform has reached a new hight. It is yet to be seen whether with it has come a permanent subsidence of the foundations on which industry and trade have been built up. Undeniably government supervision is to be a larger factor in business than it has been, but it seems equally certain that much that has gone on the statute books in the past three years will disappear under the sifting out process of the courts. Fortunately the judiciary is still of co-ordinate rank with the legislative and the executive branches of our Government, and the Constitution may still be invoked with confidence to stay the execution of legislation born of the prevalent hysteria.

The Consumption of Structural Steel.

The production of structural shapes in the United States in 1906 reached a total of 2,118,772 gross tons, a marked advance upon the output of 1905, which was 1,660,519 tons. The gain of 27.5 per cent. was greater than that in any other line of finished material, the increase of all forms of rolled products being 16 per cent. For 1904 the total of structural steel was 949,146 tons, for 1903 it was 1,095,813 tons, and for 1902 and 1901 it was 1,300,326 and 1,013,150 tons respectively. Thus in 1906 the business in structural shapes was double the average for the four years immediately preceding 1905. It is worthy of note that 1906 was the first year in which our production of structural shapes exceeded that of wire rods, representing the great wire and wire nail industry.

which has been in the past 15 years so strong a prop of the steel trade of the country.

The growth of the fabricating interests of the United States has been marked in the past three years, and the figures for 1907, when they are collected, will doubtless show that the imposing total of 1906 has been exceeded. For example, the American Bridge Company turned out 650,000 tons of fabricated work in 1907, against 577,000 tons in 1906. New firms have engaged in the business of bridge building and the erection of steel structures since 1904, and in the same period the capacity of many large established companies has been increased. Last year and in 1906 not only was a large amount of bridge work done in connection with new railroad building and the replacement of old bridges by stronger structures to carry the heavier trains, but all over the country construction work was actively prosecuted on commercial, manufacturing and public buildings. In spite of maximum prices for labor and for practically every kind of building material except steel, the movement reached unprecedented proportions, so widespread was the feeling that the foundations of the country's prosperity were not to be seriously shaken, even though some slackening of the pace might naturally be expected.

While no exact statistics are at hand, reliable estimates put the present capacity of fabricating works in the United States at about 2,200,000 tons, no account being taken of the considerable number of metal working plants in which the occasional job of preparing a few beams, angles or channels for use in construction is but incidental. It is to be considered that the above estimate of capacity includes work involving plates and bars as well as shapes. On the other hand, not all the total of structural steel shapes produced in 1906—2,118,772 tons—passed through fitting shops, a considerable tonnage of angles and channels being devoted to other than railroad and architectural uses, as, for example, the building of steel cars, agricultural implements and various forms of machinery.

A development of the past year was the increased use of beams in place of riveted work, with a resulting economy of production and increase of output. This tendency is likely to be more marked this year as the volume of business diminishes. The new structural section now rolled at Bethlehem will also contribute to the increasing use of plain material in steel cage buildings.

The New British Companies and Partnership Acts.

At a time when corporate management in the United States is under fire, the business interests of Great Britain are expressing satisfaction over the passage by Parliament of the so-called Companies and Partnership acts. The latter is already in force, the former to become operative in July. A synopsis of their provisions is contained in a recent number of *Engineering*, whose deductions would indicate that the English laws governing corporations and partnerships have been so perfected that our own national government or the legislatures of the several States might find in them some inspiration for changes in the American corporation system. The opinion is expressed "that, much as the Companies act of 1900 has done to promote trade, much more would have been done had the intention of the legislature to protect the public been more effectively expressed. It is to this end chiefly that the new Companies act is directed. But it does much more than to safeguard the investor; it may be said, in effect, to so revolutionize the law relating to joint stock enterprise as to make this form of trading and employing capital not only more businesslike but vastly more popular."

While the two acts are distinct, one applying to "companies," or corporations, to use the American equivalent, and the other to partnerships, they both deal with combinations of individuals in business enterprises along similar lines. Even the partnership referred to is not unlike a corporation in the responsibility of its members, for to it is extended the principle of limited liability in somewhat the same manner as in the limited partnerships provided for in the statutes of some of our States.

The Companies act divides corporations into three classes. The first is the company which issues a prospectus to the public, the prospectus being compulsory and having a very different meaning from that of the promoters of American corporations, for it must set forth truthfully all facts that would assist the public in its decision as to the investment. The second class of companies does not have to issue a prospectus, but in lieu of it the company is bound, before allotment, to file a statement with the Registrar. This statement is intended to stop effectually the game of the fraudulent company promoter, for it must contain all the particulars that the cautious investor requires, such as the nature and extent of the interest of every director in the promotion or in the property proposed to be acquired by the company and the amount of the commission paid or payable for procuring subscriptions for any shares or debentures of the company. It is further provided that all companies registered under the act must have balance sheets, with reports of auditors signed by the directors and filed for the examination of preference shareholders and debenture holders. This is considered a very important concession to investors. Among other new provisions is one that the certificates of shares must be ready for delivery on demand within two months after allotment. A company's expansion is encouraged by the act which allows money to be raised for buildings, works, machinery, &c., and the company may pay interest on so much of said share capital as is paid up and charge the interest to capital, not exceeding 4 per cent., providing the sanction of the Board of Trade is first obtained, a proviso offering greater security to the public. Another section makes the provision that a mortgage on debentures or uncalled capital, or any other mortgage, which if executed by an individual would require registration, must be registered by a company within 21 days, or it will be void against the liquidator or any creditor.

American corporations will be interested in a provision of the new act that foreign companies doing business and having premises in Great Britain, and using the title "limited," will be required to file a statement of particulars of their constitution with the English registrar.

Perhaps the most revolutionary part of the new Companies act is that which applies to the third class of corporations, the private companies. A private company, after July next, will have its members limited to 50, and it will restrict the transfer of its shares and will not invite public subscription. Under the existing law, private companies cannot have less than seven members, but the new act allows the formation of a limited liability company consisting of two members only. A private company of two members and up to 50 is not, like the public company, obliged to issue a prospectus or statement, since it is prohibited from selling shares to the public or from allowing the unrestricted transfer of its shares. "The small private company with its limited liability of all of

its members is likely to be very popular with those floating small concerns," says *Engineering*, "and under this act an immense amount of capital ought to be released for the use of enterprising manufacturers and traders."

Under the Partnership act a limited partnership, in a sense a fourth type of corporation, may be set up in any business except banking, with any number of partners up to 20, and in banking up to 10 partners. There must be at least one general partner whose liability to the creditors of the concern is unlimited, while limited partners are only liable to the amount of their investment. The limited partner or partners must not take an active part in the business; but they may advise, and they, or their auditor, will have access to the books. Thus the "sleeping partner," the English synonym for "silent partner," is induced to invest in business with a general partner without being at his mercy, as heretofore, or running the risk of losing his all. A limited partnership, unlike a private limited liability company, must deliver to the Registrar a statement, signed by the partners, giving full information for the benefit of creditors as to each partner, the amount of his interest, the duration of the partnership, &c. And any person may examine these particulars at the office of the Registrar, where also an index of all limited partnerships shall be kept. A small private limited liability company, even when there are only two members, must have "Limited" after its title, so that in giving credit the public will know that the liability of every member of the company is limited to the amount of his investment. In the case of a limited partnership, on the other hand, the use of the word "limited" is not required. But for the protection of creditors the registration of the statement of particulars is compulsory, and further, the provision is made that no limited partner shall withdraw any of his capital without being liable for the firm's debts to the extent of the sum withdrawn. Another feature of the new law is that the limited partnership cannot be dissolved by notice from the limited partner, nor by lunacy, bankruptcy nor death. The limited partner may assign his interest, but only with the consent of the general partners. Any business differences are outside the control of the limited partners, but can be settled by a majority of the general partners when there are more than two.

Economy in Handling Raw Materials at Shipping Ports.

Studying the movement of traffic through large shipping ports impels the conclusion that many of the methods of handling raw materials and merchandise in bulk could be greatly improved. The labor cost of transferring products between ships and cars is an important consideration, but in some respects the time spent in loading and unloading vessels means more. A vessel's charter often costs $200 to $300 per day and the ship's operation $1000 a day. When unloading by hand a vessel may be docked over 24 hr., where, with mechanical means, the cargo could be discharged in a few hours.

Great progress has been made in the economical handling of grain and ore in the most important shipping centers, but the general problem of transshipping raw material has only begun to be appreciated by engineers. This is not surprising, for developing railroad systems has absorbed attention to the neglect of the avoidable minor losses in handling materials and bulk products. Docks and terminals are a part in railroad work, but the specific problems of material handling deserve wide engineering attention.

Electricity is reducing manual labor at such shipping ports as New Orleans, Galveston and Mobile. The varying hight of the water at all seaboard ports increases the cost of discharging cargoes by imposing an enormous amount of hand work at present. Economical handling cannot be secured without eliminating much of this hand labor, handicapped as it is by the varying angularity of the runways between the ship and shore at different stages of the tide. The slowness of hand labor multiplies its expense. An advance is the use of electrically driven conveyors in the larger ships, some being adapted to unload general cargoes and others special cargoes, like bananas, rice, sugar, &c. The power required per conveyor need not exceed 15 or 20 hp. for a large range of work. The bridging by machinery of the gap between ship and car is a great advantage. The run may be only 100 or 200 ft., but this is sufficient to reduce the labor required in some cases 50 per cent., to say nothing of the time saved. Coal handling has been well worked out in the larger seaports, but still it may occasionally be seen handled in sacks by laborers, where machine methods should be in operation.

As long as selection and distribution of cargoes are necessary, hand labor cannot be entirely avoided, but without doubt large economies might be effected by eliminating the heavier manual handlings, even though the distance covered may be short. The entire shipping and mercantile world would profit by economical and rapid machine loading in place of laborious and slow methods of transfer at all shipping points, where the volume of traffic justifies the investment in the necessary equipment.

CORRESPONDENCE.

The Corrosion of Iron and Steel Pipes.

To the Editor: I have read with interest T. N. Thompson's paper on "The Corrosion of Wrought Iron and Soft Steel Pipes," as published in *The Iron Age* of February 6. I should like to call attention to the fact that Mr. Thompson's conclusion that steel pipe will last 54.7 days longer than wrought iron pipe is based on his erroneous assumption that the corrosions of both metals would have continued at the same ratio at which they started. A large number of tests made by other experimenters have proved that the corrosion of iron and steel is very irregular and erratic.

Professor Howe, in his paper on the corrosion of iron and steel, read before the American Society of Testing Materials (Vol. 6, p. 158), gives some very plausible theories as to why corrosion is not uniformly progressive. We also have made numerous laboratory tests in this direction with different solutions, such as distilled water, hydrant water, salt water, crude oil, &c., but do not wish to burden you with a list of them, as the results were so irregular as to be of no practical value. Sometimes the iron sample would corrode faster than the steel at the beginning of the test, and on the net comparison of the same samples left in the same solution several months later, it would show the steel to have corroded very much more than the iron, and vice versa; so we have come to the conclusion that laboratory tests are entirely too short in time and do not conform to actual conditions, so that they are an entirely unreliable guide to base calculations on as to the life of these metals under service conditions.

As Mr. Hartshorne stated before the American Institute of Mining Engineers, Washington meeting, 1905: "The only way this question can ever be settled, it seems to me, is by the collation of as many examples from actual practice as possible, preferably those in which iron and steel are used side by side under the same conditions."

Fortunately, we have an abundance of evidence based on actual experience which does not leave any doubt in most minds as to which metal is the most durable. For

instance: Where on account of the oil giving out, iron and steel casing was removed from many wells in the same field after seven years' use; and again, when on account of the gas giving out, two parallel pipe lines were taken up, each 25 miles long, the iron pipe after 18 years and the steel pipe after 11 years burial in practically the same soil and with the same kind of gas having passed through both, the condition of these pipes did not require expert micrometer measurements to demonstrate the superior durability of wrought iron.

I do not wish to take up too much room by citing more of these practical demonstrations, but those who desire further information on this subject can procure a pamphlet, "Court of Actual Experience," issued by the Reading Iron Company, Reading, Pa., by simply asking for it.

GEO. SCHUHMANN.

READING, PA., February 8, 1908.

The Flohr Addition to Bessemer Basic Charges.

An innovation in the carrying out of a Bessemer basic heat, says *Engineering*, is being brought forward by J. Flohr, steel works manager at Rodingen, Luxembourg. It has been adopted by the Dudelange and the Ougrée-Marihaye works and by the Rheinische Stahlwerke, Duisburg. The Flohr process, it is claimed, does away with the disadvantages attendant upon the use of lime or scrap additions. Lime thickens the slag and retards its power of absorption of phosphoric acid; moreover, a viscous slag retains iron particles readily, thus leading to a loss of metal, and the addition of scrap is conducive to a higher cost for the steel. The process is patented in Europe.

Toward the end of the decarburizing period, or later, he adds to the bath a compound, made preferably in the shape of pressed briquettes, and formed of iron oxides, hammer cinder, or rolling mill scale, with slacked lime as a binding medium. The briquettes have a rapid and intensive effect on the metal bath, and upon their addition an after blow of only a few seconds suffices to complete the operation. An addition of manganese ore to the briquettes proves advantageous in certain conditions, as it increases the liquidity of the slag, and thereby facilitates dephosphoration. The analysis of a suitable cinder or scale is the following:

	Per cent.		Per cent.
Fine granulated iron	1	Ferrous oxide	53.06
Ferric oxide	40.23	Water	6

This is sifted and ground with quicklime. The calcium oxide combines with the water in the scale to form Ca $(OH)_2$ with the development of heat. By the addition of slacked lime to the mixture, the required percentage of hydrate of lime is obtained. On being stored for a short time the compound increases much in temperature and dries. After standing for 3 hr. it shows the following anaylsis:

	Per cent.		Per cent.
Fine granulated iron	1.1	Water	4.82
Ferric oxide	30.55	CO_2	0.6
Ferrous oxide	47.90		

After standing still longer—about three days—the compound is pulverulent, and the analysis shows:

	Per cent.		Per cent.
Fine granulated iron	1.06	Lime (CaO)	9.89
Ferric oxide	31.40	Water	4.16
Ferrous oxide	44.70	CO_2	0.68

When, after a longer time, the transformation of calcium oxide into hydrate of lime is completed, briquettes are made of the compound, a press being used for this purpose. The specific weight of the briquettes depends upon the pressure exerted, but it has to be high enough to allow them to sink through the layer of slag in the converter, and to come in contact with the metal bath. In the Dudelange Steel Works, it is stated, a pressure of 80 atmospheres is worked to. In order to render the briquettes less fragile they are dried in the open, or, preferably, in an oven. The analysis of the briquettes thus dried shows that the percentage of CO_2—which in the compound amounted to about 0.65 per cent.—has risen to 1.3, thus tending to prove that in the hardening of the briquettes the occurrence is similar to that in the case of ordinary mortar exposed to the action of the atmosphere. As compared with the compound in a loose state, the proportions of ferric and ferrous oxides do not vary to a great extent. The briquettes contain:

	Per cent.
Ferric oxide	33.90
Ferrous oxide	42.05

The briquettes are thrown into the converter by hand or by a mechanical device when, by inspection of the flame, the charge is deemed to be ready for the addition, and the slag liquid enough to allow them to reach the metal bath. The quantity added depends upon the conditions of working ruling at the time. All steel makers are perfectly aware that very great variations constantly occur in the anaylsis of pig iron used for steel making, and that the charge frequently becomes undesirably hot, which circumstances tend to increase the cost price of the steel, to increase also the waste by burning and the consumption of lime, and to reduce the value of the slag. In some cases it is necessary, in order to keep the price for raw material as low as possible, to work with a comparatively very low grade pig iron, containing probably a high percentage of silicon, the reduction of which in the converter leads to a greatly increased heat of the charge, which is unfavorable to dephosphorization. In such cases the rapid cooling down of the charge by the addition of briquettes is found specially advantageous.

German Pig Iron Production in 1907.

The production of pig iron in Germany and Luxemburg in 1907 was 13,045,760 metric tons, which compares with 12,473,067 tons in 1906 and 10,987,623 tons in 1905. The product was distributed as follows in the past two years:

	1907. Metric tons.	1906. Metric tons.
Foundry pig iron	2,259,416	2,103,684
Bessemer pig iron	471,355	482,740
Basic pig iron	8,494,226	8,097,534
Ferro and spiegel	1,034,650	934,573
Forge pig iron	786,113	854,536

The exports of iron and steel from Germany in 1907 amounted to 3,452,402 tons, as against 3,674,222 tons in 1906. The imports last year were 813,349 tons, against 699,980 tons in 1906. The principal items in the export and import movements in the two years are given below:

	Metric tons. 1907.	Metric tons. 1906.
Imports.		
Pig iron	443,624	409,083
Scrap	164,105	123,345
Plates	34,941	15,456
Bars	34,756	33,531
Tinplates	43,085	38,012
Exports.		
Pig iron	275,170	479,772
Scrap	120,596	136,660
Blooms, billets, &c.	227,332	366,359
Joists, tees and angles	441,032	478,049
Wire	196,581	217,418
Rails	417,694	369,269
Sleepers and fastenings	206,940	165,047
Railroad axles, wheels, &c.	74,788	62,985
Bars	392,148	384,240
Wrought tubes	89,695	71,504
Plates and sheets	268,992	267,246
Galvanized wire, &c.	110,959	109,943
Wire nails	69,173	67,240

It will be seen that the increase in imports in 1907 was chiefly in pig iron and scrap. Plates had the largest percentage increase. In the export statement pig iron and semifinished steel show a considerable diminution, while finished products increased about 100,000 tons over 1906.

A large concrete dam 50 ft. high, 400 ft. long and containing 24,000 cu. yd. of concrete, has just been completed after four months' work for the La Crosse Water Power Company, Hatfield, Wis. The dam is for a hydro-electric plant of 16,000 hp. capacity, which will distribute current over a radius of 90 miles. J. G. White & Co. are the contractors.

Vanadium in Cast Iron.

An Investigation by the American Foundrymen's Association.

Dr. Richard Moldenke, secretary of the American Foundrymen's Association, has just published in the transactions of the association the results of a series of tests he conducted, to determine to what extent vanadium can be used advantageously in the iron foundry. It is fortunate that the American Foundrymen's Association has a secretary who can conduct such an investigation, and what has been done in the present instance suggests that, with adequate support from the foundry interests of the country, other original work might be prosecuted. We give below practically in full Dr. Moldenke's vanadium report:

By the use of vanadium in steel the elestic limit is increased without an impairment of the ductility of the steel—that is, an exceedingly strong steel is obtained, with its softness still remaining. Coupled with these most valuable properties is another, and that is the extreme resistance to deterioration when the metal is subjected to severe and continued strains in service. Vanadium steel is nonfatiguing, and, therefore, an ideal railroad and rolling mill metal. It is but natural that attention should be drawn to the use of vanadium in the foundry. The very first casting which might be benefited is the car wheel. Next would come the various kinds of rolls, then alkali pots, pump parts, &c.—wherever strains are heavy and oft repeated, either direct tension and compression alternately and in cases where castings are subjected to shock or great variations in temperature.

In order to learn something of the effects of vanadium on cast iron a series of tests was conducted, using melted scrapped car wheels for white iron and a good machinery pig iron for a variety of gray iron. A ferrovanadium carrying high carbon was selected because it melted at a lower temperature and would also be cheaper for the foundryman. Varying proportions were added to the ladle full of molten metal, first in lump form, and, as this did not give satisfaction with the small quantities of iron used at a time, the alloy was powdered before using.

Inasmuch as vanadium, besides being a great strengthener, is also a powerful deoxidizing agent, and the increase in strength obtained by its use might be attributed to the purification of the iron only, a further series of tests was included in which the ladle was first treated with 80 per cent. ferromanganese in sufficient quantity to add 0.5 per cent. of manganese, and then the ferrovanadium. In order to obtain some light on the deoxidizing power of vanadium a set of tests was also made with burnt metal, the results of which are given in the tables below.

Test Bars and Equipment.

The test bars were of the regulation kind, as prescribed by the American Society for Testing Materials—namely, 1¼ in. round, cast on end, and in dried molds. At first the molds were rammed up in the usual way in snap flasks, and the shells arranged to allow setting up and pouring the molds on end. The slightly varying diameters of the bars resulting, however, brought about a better method. Fairly heavy perforated metal sheets were cut to size and riveted up. A bottom was provided in similar manner. A little sand was rammed in the bottom, the pattern placed, rammed up and withdrawn by a spiral upward movement. The molds were then baked and afterward poured. Striking the mold would drop the sand and test bar out, and another mold could then be made. Some 40 of these perforated flasks were rammed up and dried for every run, and things went very smoothly. The cupola was a small one, specially made for the tests, 22 in. inside the lining. The tuyeres were pretty close to the bottom, as but little iron was to be held at a time. A Sturtevant fan supplied the air, power being obtained from a small gasoline engine. The cupola was but 3 ft. high above the spout, and was charged without difficulty. The coke bed was brought to red heat quickly and the iron came out very hot, especially as a high coke ratio is necessary with a small cupola. The test bars, dumped when cold, were only brushed and then broken transversely on a 5000-lb. Riehle testing machine. As there were quite a lot of tests, and many of the bars varied slightly in diameter from the standard, the breaking weights were all recalculated from the modulus of rupture back to the standard 1¼-in. test bar. This, while not correct in its strictest sense, for cast iron is not homogeneous and does not follow the rules applicable to steel, nevertheless gives a fair comparison of the general effects of the alloy addition.

Table I.

Burnt iron, gray (burnt grate bars, stove iron, &c.). No vanadium added.

Number of bar.	Broke at pounds.	Deflection, inches.	Modulus of rupture, pounds per square inch.
1	1,500	0.105	29,410
2	1,380	0.100	27,080
3	1,060	0.070	20,720
4	1,020	0.100	19,020
5	1,600	0.085	31,290
Average	1,310	0.090	25,500
Analysis of No. 2: Si, 2.13; S, 0.094; P, 0.638; Mn., 0.35. 0.05 per cent. vanadium added (lump).			
6	2,430	0.100	47,550
7	2,200	0.100	43,030
8	2,020	0.100	39,570
Average	2,220	0.100	43,380
Analysis of No. 7: Si, 2.03; S, 0.095; Mn, 0.37.			

Table II.

Burnt iron, white. No vanadium added.

Number of bar.	Broke at pounds.	Deflection, inches.	Modulus of rupture, pounds per square inch.
9	1,400	0.045	27,480
10	1,480	0.050	28,870
11	1,440	0.050	28,170
Average	1,440	0.050	28,170
Analysis of No. 11: Si, 0.41; S, 0.146; P, 0.423; Mn, 0.43. 0.50 Mn and 0.05 vanadium (lump) added.			
12	1,740	0.060	34,080
13	1,650	0.050	32,300
14	1,940	0.050	38,070
15	1,940	0.050	38,070
16	1,910	0.060	37,380
17	1,680	0.050	32,840
18	1,880	0.050	36,830
19	2,140	0.060	41,780
20	1,940	0.055	37,930
21	1,780	0.065	34,770
22	2,170	0.050	42,470
23	2,160	0.060	42,190
Average	1,910	0.055	37,400
Analysis of No. 16: Mn, 0.65.			

Table III.

Machinery iron, gray. Melted pig iron with no scrap. No vanadium added.

Number of bar.	Broke at pounds.	Deflection, inches.	Modulus of rupture, pounds per square inch.
24	1,980	0.095	38,670
25	2,210	0.100	43,220
26	2,230	0.080	43,550
27	1,660	0.120	32,440
28	1,820	0.140	35,540
Average	1,980	0.105	38,680
Analysis of No. 24: Si, 2.72; S, 0.065; P, 0.668; Mn, 0.54. 0.05 vanadium (lump) added.			
29	1,970	0.120	38,450
30	2,360	0.110	46,150
31	1,880	0.115	36,850
32	1,960	0.090	38,330
33	2,160	0.090	42,240
Average	2,070	0.105	40,410
0.10 vanadium (lump) added.			
34	2,180	0.120	42,550
35	2,150	0.115	42,080
36	1,730	0.105	33,930
37	1,930	0.110	37,820
38	1,830	0.115	35,810
39	1,990	0.120	38,950
40	1,670	0.135	32,640
41	2,420	0.140	48,380
42	1,900	0.125	37,100
43	2,550	0.100	42,470
44	2,570	0.130	50,250
45	2,280	0.120	44,670
46	2,850	0.110	55,640
47	1,960	0.105	38,250
48	2,050	0.105	40,180

Number of bar.	Broke at pounds.	Deflection, inches.	Modulus of rupture, pounds per square inch.
49	2,520	0.105	49,290
50	2,600	0.100	50,850
51	2,280	0.100	44,670
52	2,250	0.115	43,980
Average	2,200	0.115	42,600
0.15 vanadium (lump) added.			
53	2,800	0.140	54,800
54	2,940	0.115	57,410
55	2,680	0.125	52,330
56	2,560	0.140	50,070
Average	2,740	0.130	53,750
0.50 Mn and no vanadium added.			
57	2,070	0.100	40,400
58	1,910	0.100	37,360
59	1,920	0.100	37,470
Average	1,970	0.100	38,410
0.05 vanadium (ground) added.			
60	1,940	0.100	37,930
61	1,980	0.100	38,760
62	2,110	0.100	41,230
63	1,900	0.095	37,110
64	1,970	0.100	38,470
Average	1,980	0.100	38,700
Analysis of No. 61: Mn, 0.54; V, 0.33.			
0.50 Mn and 0.05 vanadium (ground) added.			
65	2,210	0.110	43,290
66	2,120	0.100	41,500
67	2,110	0.100	41,230
68	2,100	0.100	41,090
Average	2,130	0.100	41,780
Analysis of No. 66: Mn, 0.66; V, 0.25.			
0.10 vanadium (ground) added.			
69	2,240	0.090	43,830
70	2,400	0.095	46,810
71	2,500	0.095	48,770
72	2,410	0.090	47,140
73	2,310	0.090	45,080
Average	2,372	0.090	46,320
Analysis of No. 70: Mn, 0.59; V, 0.36.			
0.50 Mn and 0.10 vanadium (ground) added.			
74	2,440	0.110	47,760
75	2,520	0.120	49,340
76	2,640	0.120	51,670
Average	2,530	0.120	49,590
Analysis of No. 75: Mn, 0.59; V, 0.25.			
0.15 vanadium (ground) added.			
77	2,320	0.100	45,350
78	2,330	0.100	45,490
79	2,250	0.100	43,980
80	2,450	0.100	47,960
81	2,430	0.100	47,550
Average	2,360	0.100	46,070
Analysis of No. 78: Mn, 0.56; V, 0.27.			

Table IV.

Remelted car wheels, white. No pig iron. No vanadium added.

Number of bar.	Broke at pounds.	Deflection, inches.	Modulus of rupture, pounds per square inch.
82	1,420	0.040	27,760
83	1,550	0.050	30,220
84	1,470	0.045	28,720
85	1,710	0.050	33,420
86	1,200	0.050	20,390
Average	1,470	0.050	28,100
Analysis of No. 82: Si, 0.60; S, 0.122; P, 0.399; Mn, 0.38.			
Analysis of No. 85: Si, 0.53; S, 0.138; P, 0.374; Mn, 0.44.			
0.05 vanadium (lump) added.			
87	2,750	0.050	53,750
88	1,880	0.050	36,730
89	2,000	0.050	39,030
90	1,960	0.055	38,340
91	2,350	0.050	39,990
Average	2,190	0.050	41,570
0.10 vanadium (lump) added.			
92	1,980	0.050	38,750
93	2,100	0.050	41,090
94	2,040	0.040	39,850
95	2,170	0.050	42,440
96	2,050	0.050	40,090
97	1,910	0.040	37,350
98	2,080	0.050	40,680
Average	2,050	0.050	39,750
0.15 vanadium (lump) added.			
99	2,100	0.075	41,090
100	2,300	0.050	44,810
101	2,570	0.080	50,300
102	2,360	0.050	46,180
103	2,020	0.055	39,440
104	2,410	0.050	47,140
105	2,130	0.070	23,570
106	2,220	0.060	43,290
Average	2,264	0.060	44,480
0.50 Mn and no vanadium added.			
107	3,060	0.070	59,860
108	2,700	0.070	52,840
109	2,590	0.070	50,560
110	2,810	0.075	55,030
Average	2,790	0.070	54,570
0.05 vanadium (ground) added.			
111	3,030	0.060	59,260
112	3,010	0.065	58,860
113	3,020	0.060	59,070
114	2,950	0.060	57,690
115	3,040	0.065	59,460
116	3,060	0.060	59,850
Average	3,020	0.060	59,030
Analysis of No. 113: Si, 0.45; S, 0.096; P, 0.423; Mn, 0.40; V, 0.36.			
0.50 Mn and 0.05 vanadium (ground) added.			
117	2,980	0.080	58,270
118	2,950	0.080	57,720
119	3,020	0.090	59,090
120	3,090	0.090	60,470
121	2,770	0.075	54,280
122	2,990	0.095	58,410
Average	2,970	0.090	58,040
Analysis of No. 117: Si, 0.66; S, 0.110; P, 0.591; Mn, 1.15; V, 0.25.			
0.10 vanadium (ground) added.			
123	2,870	0.060	56,130
124	2,640	0.050	51,630
125	2,910	0.060	56,910
Average	2,800	0.055	54,890
Analysis of No. 123: Si, 0.45; S, 0.119; P, 0.414; Mn, 0.50; V, 0.31.			
0.50 Mn and 0.10 vanadium (ground) added.			
126	2,950	0.090	57,720
127	3,060	0.100	59,780
128	2,970	0.100	57,990
129	3,130	0.080	61,160
Average	3,030	0.090	59,220
Analysis of No. 128: Si, 0.53; S, 0.084; P, 0.431; Mn, 0.74; V, 0.27.			
0.15 vanadium (ground) added.			
130	3,460	0.075	67,670
131	2,700	0.065	52,800
132	2,570	0.060	50,260
133	3,040	0.070	59,310
134	3,250	0.075	63,560
135	2,700	0.060	52,800
Average	2,950	0.070	59,230
Analysis of No. 133: Si, 0.42; S, 0.112; P, 0.417; Mn, 0.40; V, 0.45.			
0.50 Mn and 0.15 vanadium (ground) added.			
136	4,020	0.090	78,620
137	3,940	0.100	77,050
138	3,960	0.080	77,440
139	3,860	0.080	75,490
140	3,740	0.120	73,070
141	4,000	0.100	78,230
Average	3,920	0.095	76,650
Analysis of No. 137: Si, 0.50; S, 0.081; P, 0.374; Mn, 0.54; V, 0.22.			

Comments on the Results.

The analyses were for the most part made on bars in which the powdered alloy was used, as these tests were most satisfactory. All tests, however, are given as they seem to confirm the belief that the addition to the strength of the metal is a well founded one. The vanadium alloy used contained

Vanadium	14.67
Carbon	6.36
Silicon	0.18

While the vanadium content is comparatively low, this is a very good alloy for foundry purposes, as cast iron is already high in carbon, and the silicon is too small to cut an appreciable figure in the results. While the attempt was made to get as nearly 0.05, 0.10 and 0.15 vanadium into the ladles of metal as possible, the analyses show that for the bars selected (as nearly the average for strength as possible) as much as two or three times actually remained after casting. This is due first to the impossibility of accurately weighing out in the small space of time available to prevent undue cooling of the metal, most of the time dealing with less metal in the ladle than expected or arranged for. Then, with the small quantities tried,

the chances for irregular distribution were very great. A foundry with 5 or 10 ton ladles would give a better opportunity. Finally there is the uncertainty of how much or little vanadium is oxidized. The very best results with both manganese and vanadium show very little of the latter remaining.

The results, however, are sufficient to strongly recommend the new alloy to the consideration of foundrymen. If but a part of the resistance to deterioration found by adding vanadium to steel should be proven by service trials to exist in cast iron, then on the score of safety to human life alone, the metal belongs in every car wheel. A still better method would be to use a more powerful deoxidizer than manganese and add the vanadium on top of it.

The results shown in the tables speak for themselves, and the averages tallied off for each table show a remarkable progression of values. To increase the breaking strength of a test bar from 2000 up to 2500 for gray iron, and 1500 up to 3900 for white iron is sufficient to warrant further investigation on the part of every foundryman who has special problems in strength to master, and this part of the investigations is therefore given to the foundry public at this time, rather than to wait for the further tests still on the programme. It is expected to continue the investigations on vanadium in cast iron further, making provision to keep the ladle with melted iron heated up for a fairly long period, so that better mixing of the alloy may result, and hence more accurate results can be obtained.

Italian Laborers in the United States.

Italy, Austria-Hungary and the Slavic countries of Eastern Europe are at the present time the principal sources of the unskilled labor supply of the United States, more than two-thirds of all the immigrants now entering the country coming from these countries. Italy contributes about one-fourth and Austria-Hungary and the Slavic countries of Eastern Europe something over two-fifths of our immigrants. The distribution, employment and manner of living of these immigrants, with special reference to their assimilation into American industrial life, is the subject of a study by Frank J. Sheridan in Bulletin 72 of the Bureau of Labor of the Department of Commerce and Labor.

Contracting companies engaged in railroad construction and similar undertakings employ men of various nationalities. The work is usually carried on where there are no accommodations for boarding and lodging the workmen. A boarding camp is as much a necessity for a contracting company as the picks, shovels and machinery for doing the work. A fixed charge is made for the boarding and lodging per week of each man. At the common table the unskilled immigrant laborers of all European nationalities, excepting the Italian, come into close personal contact with their first Americanizing influences. The Swede, Norwegian, Finlander, German and Slav rub elbows for the first time with the American born and foreign born of the English speaking races at the eating tables of the boarding shanty, and there get their knowledge of the common language.

Italian Laborers Live Separately.

In the lumber camps, the coal mines and the railroad camps this getting together, amalgamation and assimilation go on every day. The Italian laborers, however, are not brought into contact with these Americanizing influences, rude as they may be. In all cases the railroad and contracting companies find it necessary to provide separately for the Italian laborers. It is usually made one of the conditions of employment of Italian laborers that a commissary be established at the labor camp for the sale of the articles of food preferred by them, each man eating and cooking in such fashion as may suit him. Unlike other races they do not select a cook from among their number or otherwise to furnish meals at a common table.

The padrone encourages this method on account of the profits he realizes from the sale of the food. Through this system he keeps in touch with his countrymen and can control their movements and employment. When work ceases at one point and with one employer he can transfer them to another and make a profit in the fee for each man. The Italian laborer himself insists upon the commissary system because he can live much cheaper in this way.

Cost of Usual Board and Lodging.

The Slavic and Hungarian laborers, when the work is of a permanent character, prefer to form groups of 20 or 30 men, procure a house or shanty, and live on the co-operative plan. They insist on a much greater variety of food than the Italians, and fresh and salt meats are regarded as essential parts of their bills of fare. Under such an arrangement the cost of supplies and board ranges from $10 to $11 a month. In the absence of opportunity for co-operative living they live at the boarding camps at the same cost as others. Many cases are found where they live, according to the American fashion, and pay $12 a month for board and lodging.

Investigation of the records of a large contracting company engaged on railroad construction and employing many laborers of various nationalities, as well as Italians, shows that the actual cost to the company of groceries, provisions and payment for cooks, waiters, fuel, light, &c., at its boarding camps for a given period was 19 cents a meal, or $3.99 a week for each man. The men were charged $18 a month for board and lodging.

Italian Monthly Expenses.

The Italians at the camps of the company lived mostly on macaroni, sausage, cheese, sardines and bread. Macaroni and bread were the staples, the sausage, sardines and cheese being used very sparingly. The average monthly expense of the Italian laborer was as follows:

25 1½-lb. loaves of bread, at 8 cents	$2.00
30 lb. of macaroni, at 7 cents	2.10
Sausage, sardines and cheese	1.50
Lard	.30
Total for food	$5.90

Most of the Italians, in addition to the above, spent an average of $3 per month for beer, cheap cigars or tobacco, which, with the expense of $1 per month for shanty rent, brings the total cost of living per man to $9.90 per month.

An examination of the records of three railroad systems in New York, Pennsylvania and New Jersey for 1905 and 1906 gives accurate record of the earnings and the total cost of living of large numbers of Italian laborers employed on these railroads and living under the usual commissary system. The average earnings per man for a representative month in 1906 for 89 gangs, numbering 1530 men, were $37.07. The cost of all food was $5.30 and of rent of shanty and sundries $1.49, or a total of $6.79, leaving a surplus of $30.28.

The Italian laborers are said to save more money at the same wage rate than any other class of European laborers in the United States. The thrift of the Italian is indicated by his method of living. The amount of his savings is indicated to some extent by the money orders sent from this country to Italy. The total amount of money orders sent in 1906 to all countries was $62,435,343, and of this $36,798,562, or 58.9 per cent., went to Italy and the Slavic countries. The total amount of these money orders sent to Italy was $16,239,134, while the amount sent to Austria-Hungary and Russia was $20,559,428, the number of natives of those countries in the United States being about double those from Italy.

A horizontal tubular boiler in the Kern River Oil Field, Cal., exploded October 19, 1907, and made a remarkable flight of 1220 ft. In so doing it cleared the top of a derrick 74 ft. high. The boiler was of 70-hp. size, and weighed about 5 tons. As usual the fireman insisted that the gauge showed plenty of water in the boiler, and the cause of the explosion seems to be inexplicable.

Asbestos in the form of waterproof slates is reported to have been placed on the market by a Munich manufacturer. In building construction it obviates the use of wooden laths, and it makes an excellent electric insulator.

PERSONAL.

Robert Wuest, commissioner of the National Metal Trades' Association, has returned from a three months' trip abroad.

H. H. Stambaugh, secretary of the Brier Hill Iron & Coal Company, Youngstown, Ohio, sailed last week for a three months' absence in Europe.

Charles M. Schwab, chairman of the Bethlehem Steel Corporation, and Archibald Johnston, president of the Bethlehem Steel Company, sailed for Europe Saturday.

John S. Hawkridge of Hawkridge Brothers, Boston, proprietors of Hawk brand steel, and sole New England agents for the Halcomb Steel Company, Syracuse, N. Y., and J. J. Dean of Cape Ann Tool Company, Pigeon Cove, Mass., accompanied by their families, have started on a two months' sojourn in California.

Axel Sahlin of Julian Kennedy, Sahlin & Co., Ltd., London, England, recently sailed for India, in connection with construction work on the proposed plant of the Tata Iron & Steel Company, Ltd., for which the above firm has been appointed consulting engineer.

James T. Hayden, for over 22 years superintendent of the Crane Company's brass department, Chicago, Ill., has retired from that position, but remains with the company in another capacity. Previous to going with the Crane Company Mr. Hayden had been employed 14 years in his first position, in charge of brass foundry operations.

The Monarch Emery & Corundum Wheel Company, Camden, N. J., announces that it has appointed Charles A. Bacmeister its Western representative, with headquarters in Chicago. He has had extensive experience in the grinding wheel field.

S. A. Williams, Jr., who has been sales and traffic manager of the Atlas Car & Mfg. Company and the Atlas Bolt & Screw Company, Cleveland, Ohio, has been placed in charge of the Chicago office of the two companies as sales manager. He will look after the interests of the two companies in Chicago and the Northwest. His office is 905 Plymouth Building, Chicago.

Ralph P. Zint, formerly assistant general manager of sales for the Republic Iron & Steel Company at Pittsburgh, has been installed as manager of sales at Chicago, succeeding J. E. Hubbert, who has been transferred to a similar position in the company's St. Louis office.

Joseph B. Sessions, son of William E. Sessions, president of the Sessions Foundry Company, Bristol, Conn., who has been assistant secretary of the company, has been elected vice-president. Arthur F. Woodford, for many years superintendent of the bench work, or small castings department, has been elected secretary, to take effect March 1. The present secretary, George M. Eggleston, who has held the office for 10 years, will retire from active business March 1, and will spend much of his time the next few years in travel.

The Andrews Steel Company.—The new plant of the Andrews Steel Company, Newport, Ky., will manufacture acid and basic open hearth steel ingots, blooms, billets, slabs, sheet and tin bars and forging billets. A large portion of the output will be consumed by the Newport Rolling Mill Company, which is owned by the same interests. Some of the daily papers erroneously reported the Newport Rolling Mill Company to have suffered by fire last week. Charles H. Sloan of Vandegrift, Pa., has been made general superintendent of the Andrews steel plant, and is now on the ground to assist in the work of preparation for starting the new mills on or about April 15. He was formerly district manager of the American Sheet & Tin Plate Company's operations in the Kiskiminetas Valley, which includes plants at Leechburg, Hyde Park, Saltsburg and Vandegrift, the last named containing 11 open hearth furnaces and 39 sheet mills. Mr. Sloan continues in the same class of work with which he has been identified for the past 15 years.

The American Can Company's Report.

The net earnings of the American Can Company for the year ending December 31, 1907, were printed in *The Iron Age* of last week on page 460. President W. T. Graham's report to the stockholders is as follows:

"While the earnings for the year are the largest ever made they are not as much as the business promised prior to the financial troubles of last fall and the partial paralysis of business that followed. Sales in November and December fell off heavily, as compared with previous months of the year and the same months in former years, and a heavy loss was occasioned by depreciation in inventory value of materials. Before determining net earnings—$3,246,827.55, as stated—$395,658.55 was written down from cost on tin plates, metals, other materials and products, and questionable accounts aggregating $113,926.43 were charged to profit and loss, so that inventory and receivables, as stated, are as clean assets as rigid scrutiny can make them.

"There has been expended during the year in the completion of new factories at New Orleans, Savannah and New Castle, rebuilding those destroyed by fire at San Francisco and St. Paul and in enlarging the capacity of others, $956,926.63, but due to the sale of unused properties for $128,909.75 and a liberal write off for depreciation, investment in fixed property—namely, plants, real estate and new construction and improvements—has only increased by $147,929.68, a small sum, as compared with increase in manufacturing facilities and the advantage of distribution from three new locations. After paying dividends for the year and for extensions as stated, $552,477.19 has been added to working capital from profits.

"The products of the company are widely distributed and of a character that do not enjoy extraordinary activity in boom periods or suffer the reverse in times of depression, and, notwithstanding the fact that sales for November and December fell off, and were not up to normal in January, 1908, due to the financial situation, there is evidence of improvement, and it is reasonable to look for a fair business in 1908, without regard to the prospects in other lines of manufacture."

The balance sheet, as of December 31, 1907, is as follows:

Assets.

Plants, real estate, patents, &c.		$73,965,162.25
New construction and improvements		5,096,458.64
Other investment items		1,523,518.63
Cash		967,193.22
Accounts and bills receivable		2,122,207.36
Materials and products inventory		4,764,872.28
Total		$88,439,412.38

Liabilities.

Capital stock		$82,466,600.00
Preferred	$41,233,300	
Common	41,233,300	
Bills and accounts payable		637,772.58
Dividend payable January 2, 1908		515,416.25
Contingent funds		130,128.05
Surplus		4,689,495.50
Total		$88,439,412.38

The Japanese International Exposition.—Aoyama, one of the highest and most beautiful parts of Tokio, has been chosen as the site for the Grand Exhibition of Japan, to be held from April 1 to October 30, 1912. The exhibition grounds will cover a total area of about 290 acres. A road about 480 ft. in width will be built, connecting the Aoyama parade ground and the imperial property, near by. Thus far a number of nations have sent their approval of the exhibition to the Japanese Government. The exhibition is to be held, not for the purpose of commemorating any historical event, but to show to the world the development and progress of Japan. The government has planned to spend $5,000,000 from the national treasury, and it is expected that the various provinces and municipalities will appropriate $5,000,000 more to the exhibition. The city of Tokio will contribute $2,500,000 as its share.

New Pennsylvania Railroad Specifications for Rails.

In connection with the placing of orders for 55,000 tons of rails in the past week for delivery in 1908, the Pennsylvania Railroad Company issued a statement referring to some of the features of its new specifications. One of these to which the company's statement does not refer is the requirement of a drop test of a piece of rail from 4 to 6 ft. long, one such test being made from each blow of Bessemer steel. The steel manufacturers' latest specifications for Bessemer rails provide that "one drop may be made on a piece of rail not less than 4 ft. and not more than 6 ft. long, selected from each blow of steel." The steel manufacturers' specification differs also in providing for alternative tests, in case a rail breaks under the drop test, and for the acceptance of all the rails from the blow, in case two other rails from the same blow as the original rail stand the drop test. The principal departure in the new Pennsylvania Railroad specification is the new section, which in general differs from the American Society of Civil Engineers' sections in having a thicker web and in providing for practically the same amount of metal in the flange as in the head. Further the question of discard is treated broadly, in line with the position of the Pennsylvania experts that the manufacturers' practice is not so great a concern as that he produce sound rails. The statement of the railroad company is as follows:

The Pennsylvania Railroad Company to-day (February 6) placed definite orders with steel manufacturers for 55,000 tons of rails to be delivered during 1908. These, in addition to 30,000 tons left over from 1907, will give the company 85,000 tons for use this year. These rails will be rolled under entirely new specifications. In view of the increasing severity of road service and the recognized necessity for developing an improved steel rail, the Pennsylvania Railroad has been conducting for some months an exhaustive examination of the entire art and practice of rail manufacture. A committee of experts, representing not only the railroad but two of the important steel manufacturers, was appointed by the Pennsylvania System last summer to make a special study of the subject. The experiments undertaken were probably unprecedented in their completeness and in the importance of the scientific data which they supplied. The new rail sections are believed to be a distinct improvement upon those hitherto in use on the Pennsylvania System.

Most important of the features of the new specifications is placing more upon the manufacturer the responsibility for the character of the rail produced. The company recognizes that it is merely a purchaser, not a manufacturer. Considerable latitude is, therefore, to be allowed in the methods of manufacture utilized, so long as the result is a sound rail. The company has devised tests of a character so exacting that it is made very much to the interest of the manufacturers to discard all material of the soundness of which there is any doubt.

No specification, for example, is made as to the amount which shall be sheared from the end of the bloom formed from the top of the ingot. The problem of a proper discard has been discussed very freely by the different societies which have been considering rail specifications. Various percentages have been proposed, a discard of 25 per cent. having the greatest number of advocates. The Pennsylvania Railroad feels, however, that in the present state of the art, at any rate, the responsibility for a proper discard should be left with the manufacturer.

The new specifications also provide that rails shall be free from "injurious" mechanical defects and flaws. This differs from the old specifications in that no attempt has been made to describe the particular defects or flaws that will cause the rejection of rails. It is not considered wise to attempt to classify in the specifications the relative importance of defects, but it is specified that no rails will be accepted that contain defects or flaws which in any way impair their strength.

The methods to be used in testing the new rails are very elaborate and comprehensive. To still further strengthen the practice of the company and to insure that whatever future changes are made shall be based upon accurate data, a system has been devised whereby the history of all rails purchased by the company shall be fully recorded. In order that for this purpose it may be possible to identify the part of the ingot from which particular rails were made, the new specifications require, in addition to the usual marking, that a letter shall be stamped on each rail to indicate its position in the ingot. To compile and consider the company's experience with rails, a special committee is to keep continually in thorough touch with the art, and is expected to supply the company with data that will enable it to secure the best rails which, at the time of any order, it is possible to manufacture.

In placing its orders, the Pennsylvania Railroad invites the steel manufacturers to undertake to fill part of the allotment with rails made by the open hearth process. It is desired to ascertain more clearly the actual differences in service as between the open hearth and the Bessemer product.

OBITUARY.

WILLIAM J. SEATON, JR., second vice-president of the C. W. Hunt Company, West New Brighton, New York, died at his home at Clifton, Staten Island, January 18 from typhoid fever at the early age of 36 years. Seventeen years ago he entered the employ of the C. W. Hunt Company as office boy, but his exceptional abilities soon gained for him the recognition they deserved, and promotion followed as a matter of course, so that at the time of his death he had risen to be an important officer. His name was associated with many of the large contracts carried out by the company in recent years.

CYRUS A. TAFT, Whitinsville, Mass., for many years head of the Whitins Machine Works, manufacturer of textile machinery, died February 6. He was the son of Gustavus Taft, who was head of the Whitin Machine Works before him, and after graduating at Amherst College entered the employ of the company and rapidly advanced until he became the controlling factor.

ORRIN S. WERNTZ, treasurer of the National-Acme Mfg. Company, Cleveland, Ohio, since its organization, died February 6, aged 32 years. He was born in Canal Fulton, Ohio, removed to Cleveland early in life, and his first position was with the National Screw & Tack Company, remaining until the organization of the National-Acme Mfg. Company. He was only ill for about one month, having been last at the office on January 4. He leaves a widow and a young son.

ALBERT FRANKLIN KNIGHT, Providence, R. I., manager of the Providence Machinery Exchange, died February 4, aged 54 years. He was a native of East Greenwich, R. I. He was prominent in the cotton manufacturing business until eight years ago, when the Machinery Exchange was organized, and he became its manager. He leaves a widow, a son and two daughters.

ALVIN C. SEYMOUR, Warren, R. I., an inventor, who had been connected with the management of machinery manufacturing plants, died February 3, aged 59 years. He was born in Barrington, R. I. ,and learned the trade of blacksmith, and for 20 years conducted a carriage building and machine forging business at Fall River, Mass. He became manager of the Chace Elevator Works, Warren, and subsequently was with the Providence Steam Engine Company, Providence, and with the American Cable Way Company, Fall River. He leaves a widow and one son.

A new coal field is being opened up near the coast of California, between San Francisco and Los Angeles, which is expected to have an important effect on the fuel supply conditions in that State. Unlike most beds in the State, which are lignitic in character, this one is an 18-ft. seam of semibituminous coal. It is expected that several hundred tons of coal per day will soon be produced by these mines, and about 1½ miles of gangways have been opened up.

The Lake Ore Movement in 1908.

A Marked Reduction from Last Year.

DULUTH, MINN., February 8.—While no schedules of intended ore shipments for the coming season have been made out by mining companies or railroads, there is every reason now to anticipate a decrease of not far from 20 to 25 per cent. from 1907. Some independent shippers are cutting down 50 per cent. and the Steel Corporation will move at least 15 per cent. less. Vessel men are not looking for a large movement down the lakes before the middle of June, and fully expect labor troubles in the spring. Matters in this connection are now under discussion and may be settled during the coming week. With less ore to be moved than last year, more shipping in which to transport it, and a fairly long season, there will be a tendency toward lower rates that will be hard to overcome, and vessel men will be forced to curtail costs, the main item of which is wages.

Active Winter Stripping at Mesaba Mines.

A great deal of winter development in surface mines is being carried on along the Mesaba Range, especially at the centers of Virginia, Eveleth, Hibbing and Coleraine. At Virginia the Oliver Iron Mining Company has a large tonnage in the Norman mine, the lease of which expires in a very few years. The fee owners have been unwilling to renew it at any terms the company cares to accept. There are some 6,000,000 tons of ore in the deposit, which must be taken off at the rate of about 2,000,000 tons a year, and this will make the Virginia group one of the chief centers of Mesaba activity the coming year. The Republic Iron & Steel Company will strip some of its small underground properties at Virginia, notably the Union. This mine was opened as an underground proposition, though there is but 40 ft. of surface over the ore. This company's old Franklin mine, adjoining, is well worked out, but some ore has been found in the bottom of the old mine and more may be. The Commodore, also an old underground mine, finally stripped for larger and more economical operations, mined the past year nearly 500,000 tons, its best record, but the changed conditions will affect the amount materially this year. In the Hibbing District stripping at the Sellers and adjacent properties continues on an elaborate scale. The work of stripping proceeds at Coleraine also, with the utmost vigor, and the amount of earth moved monthly is astonishing. At Eveleth work is running less rapidly, and is about over till spring. Many stripping jobs have been stopped on account of cold weather.

Moving Rivers Over Mines.

At the Loretto mine, where the channel of the Sturgeon River is being changed to permit the mining of ore up to the river bed, the mining inspector has ordered all mine operations stopped till the river is removed, in fear of another Mansfield disaster, where the river above broke into the mine and drowned the men like rats in a trap. At the Loretto, at the time of a recent inspection of underground workings, the levels had caved from the sixth up to the second, the latter being but 120 ft. from the bed of the river, while the character of much of the ground hanging between the cave and the river bed was unknown. The work of changing the course of the river will take six months or more. Another river to be moved is the Michigamme, at the new mining town of Gwinn, where the Cleveland-Cliffs Iron Company is opening its Smith and other mines. A concrete shaft has been sunk by the Foundation Company of New York through quicksands and the river silt, but it has been decided that to make mining reasonably economical it will be advisable to shift the river.

A Noteworthy Steel Lined Shaft.

At Ludington C, the new vertical steel lined shaft of the Chapin mine, Menominee range, the Oliver Iron Mining Company is installing a very fine hoist, a first motion duplex reversing Corliss of exceedingly heavy construction. The engine is 34 x 72 in. and runs at 50 rev. per min. The drum is 12 ft. in diameter and 10-ft. face, giving a winding speed of 1800 ft. per minute. The depth of the shaft is 1522 ft. Skips will have capacity for 7 tons of load, and each will weigh, empty, 1 ton. The cable will be round wire 1.38 in. in diameter. The old hoist will be utilized at the Norris mine, Ironwood, Mich. This C shaft is one of the finest in the lake region. It is four-compartment, measuring 10.4 x 21.3 ft., with two-skip compartments, each 5 x 6 ft.; one pump compartment 10.4 x 11.1 ft., and one cageway 5 x 10.4 ft. The pump compartment was designed to contain a large Cornish pump ladderway, pipes and counterweight. The shaft is especially interesting as showing the application of steel lining to large compartments. It will be noted that the dividing members of two of the compartments are over 10 ft. long, requiring material of much greater weight than if they were only 5 or 6 ft. long. For the long timbers 6-in. 12.25-lb. I-beams are used throughout. In the construction of this shaft it was necessary, on account of the size of the plates, to handle the sets in halves, which were connected underground. This shaft has been three years in construction, and should be handling ore in large quantity the coming season.

The Chicago & Northwestern road is tearing down and replacing its old ore dock at Ashland, intending to have a higher and more commodious structure. The new dock will be 70 ft. high from water line to deck, 50 ft. wide and of about 42,000 tons storage capacity. Timbers taken from it will be saved and used in the construction of a coal handling pier alongside. The steel ore dock of the Duluth & Iron Range road at its Lake Superior terminal is proceeding steadily, and will be ready in ample time for the needs of the road.

W. G. La Rue of Duluth has been working since last summer in the district lying between Republic, on the Marquette range, and the Crystal Falls section of the Menominee. This is in the Michigamme Valley, some 10 or 12 miles north of Crystal Falls. It is understood that ore has been cut at shallow depths. On account of a generally heavy drift overburden the region has been left unprospected until now.

Work on the Menominee Range.

Corrigan, McKinney & Co. are pushing exploration in the district around Crystal Falls, and have three drills working in that stretch of territory running from the Tobin to the Kimball mines. Some ore has been found at a considerable depth, and the results have been encouraging for further exploration. This company will drill lands owned by the Donovan estate, near Crystal Falls. Indeed there is a very active time in the Menominee sections, and many options have recently been taken and many drill operations are planned, in addition to those now under way. Near Iron River the Verona Iron Company is sinking a shaft on ground drilled in the past 18 months and will go to 200 ft. before drifting. The Florence Iron Company has taken lands just northeast of Iron River, and both these properties look as though they might make mines. The Huron Mining Company, which is exploring near the old Armenia mine, has found ore and will develop it. This ore was found in a drift about 40 ft. below the bottom of the old shaft.

A New Option on Section 30.

Another chapter has been started in the history of the famous Section 30-63-11, on the Vermillion Range. Some months ago the Shagawa Iron Company, holding an option for lease from the fee owners, dropped its work and abandoned the property, but negotiations for a renewal of the option at more moderate terms have now been concluded, and the company will resume exploration soon. The new option prolongs exploration by two years, drops all demands for a large cash bonus to be paid for the lease, and reduces the required output to a maximum of 300,000 tons, after a term of years. The royalty is now made 75 cents a ton. It is stated that ample ore is proved and ready for mining to maintain a considerable output for some years. So far in the exploration of this property, the work being confined to one 40-acre tract, all parties must have spent about $250,000, in addition to $1,000,000 or more for litigation and similar expenses.

D. E. W.

NEWS OF THE WORKS.

Iron and Steel.

At a recent meeting of stockholders of the Standard Gauge Steel Company, Beaver Falls, Pa., manufacturer of finished steel specialties, the following directors were elected: John Beavan, H. F. Dinger, J. W. Forbes, Alexander Gilliland, William Moltrup, Stephen Moltrup, Abram Rasner and J. M. Reed. The directors organized by electing the following officers: A. Rasner, president; Stephen Moltrup, vice-president and manager; H. F. Dinger, treasurer; J. A. B. Patterson, secretary; William Moltrup, assistant secretary.

The Northumberland Iron & Nail Works, Northumberland, Pa., has not yet completed plans for making repairs to the part of its plant which was wrecked by an explosion of a boiler. The building covering the furnaces was blown down and three furnaces were more or less damaged, but practically no machinery was destroyed.

The Halcomb Steel Company, Syracuse, N. Y., has increased its capital stock from $1,500,000 to $1,750,000.

Furnace A of the Wisconsin Steel Company, South Chicago, Ill., was banked from January 2 to January 19. It was blown out last week.

General Machinery.

The Livingston Manor Machine Works, Livingston Manor, N. Y., will erect a building 20 x 30 ft. for general repair work. A specialty will be made of automobile repairs, and in addition a small line of supplies will be carried. W. D. Wakeman is manager.

The Second-Hand Electric Machinery Company, Kansas City, Mo., has been incorporated with a capital stock of $10,000 to buy, sell and rent generators, motors, lamps, transformers, meters, switchboards, &c. The incorporators are E. R. Royer, R. B. Coleman and G. B. Wandling.

The Parker Machine Company, Buffalo, N. Y., has increased its capital stock from $400,000 to $450,000.

Foundries.

Press reports that the plant of the Duquesne Steel Foundry Company at Kendall Station, near Pittsburgh, had resumed operations with a large amount of work ahead are untrue. This plant is closed down at present, but was recently in operation for a short time working off an accumulation of orders. Under normal conditions the company employs about 500 men.

The Price-Evans Foundry Company, Chattanooga, Tenn., architectural iron works and specialties, contemplates building an addition to its main foundry, 60 x 110 ft. The addition, which is contingent on the closing of a street at the end of the company's property, will be of steel and brick construction, and will necessitate the expenditure of about $4000.

The Dimmick Pipe Company, Birmingham, Ala., has suspended operation for necessary repairs to the casting pits. It is reported that this work will be completed during the coming week and operation resumed in all departments.

The Decatur Car Wheel Company of Birmingham, Ala., has resumed operations after a short suspension for repairs to equipment.

Power Plant Equipment.

The Borough of Park Ridge, N. J., will receive bids until February 17 for improving the electric light plant, including the installation of a 30-kw. gasoline driven direct connected unit.

The Board of Public Works of Oakland, Cal., will receive bids until March 18 for the construction of a salt water pumping plant.

At a recent meeting the citizens of Kewaunee, Wis., voted to establish a municipal electric light plant, and a committee has been appointed to investigate the cost of constructing a plant. Thos. Konop is secretary of the Lighting Committee.

The New York Trust Company, New York, will act as trustee and transfer agent for a new issue of $200,000 of bonds recently authorized by the Boise Gas Light Company, Ltd., Boise, Idaho. These bonds will be used to retire old bonds that were never issued, and the remainder of the proceeds will be used for the extension, improvement and re-equipment of the plant.

Fires.

The ore separator of the Delaware & Hudson Company at Lyon Mountain, N. Y., which supplies Standish Furnace with iron ore concentrates, was badly damaged by fire February 7.

The repair shops of the Baltimore & Ohio Railroad, Mount Clare, Baltimore, Md., were damaged $25,000 by fire January 31.

The machine shops of the South & Western Railroad at Johnson City, Tenn., were destroyed by fire February 3, the loss being about $30,000.

The plant of the Licking Rolling Mills Company, Covington, Ky., wa sdestroyed by fire February 5, the loss being about $100,000.

The plant of the Ontario Powder Works, Tweed, Ont., was destroyed by an explosion February 4.

The plant of the Industrial Machine Company, Cleveland, Ohio, was destroyed by a fire that swept through the block occupied by the company, February 6. Some of the machinery may not be a total loss.

The plant of the Wholley Boiler Works, Pawtucket, R. I., was burned February 5, with a loss of $40,000.

Hardware.

The Leader Fence Machine Company, St. Charles, Ill., having been purchased by H. L. Fahrney and J. H. Keith, has been reorganized and incorporated under the name of the Leader Fence Company.

The capital stock of the North Dakota Metal Culvert Company, Fargo, N. D., has been increased from $50,000 to $100,000.

Miscellaneous.

The Printers' Type Foundry, Louisville, Ky., has been incorporated with a capital stock of $5000 to deal in printers and binders' machinery and supplies. The officers are Robert N. Krieger, president; Herman J. Wanner, secretary and treasurer.

The municipal government of the city of Evansville, Ind., has approved a proposition for the construction of a filtration plant, bids upon which will probably be asked about the middle of March or the first of April. The expenditure contemplated for this improvement will be about $200,000. J. W. Peck is superintendent of the Water Works Department.

The business of the bankrupt Racine Babcock Fire Extinguisher Company, Racine, Wis., has been acquired by George L. Buck, and will be continued in connection with the Racine Iron & Wire Works Company, with which it is incorporated.

Other Years of Declining Pig Iron Production.

In the pig iron market review for the past week sent out from the Philadelphia office of Rogers, Brown & Co. occurs the following reference to the records of off years in pig iron production—that is, the exceptional years in which less pig iron was made than in the immediately preceding years respectively.

It is interesting to look over the figures and note what may be expected if we are to rely upon precedent. In the past 35 years there have been only nine calendar years in which production of pig iron in the United States was less than in the year before, as follows:

In 1875 production was 84 per cent. of that of the previous year.
In 1876 production was 92 per cent. of that of the previous year.
In 1884 production was 83 per cent. of that of the previous year.
In 1885 production was 99 per cent. of that of the previous year.
In 1891 production was 90 per cent. of that of the previous year.
In 1893 production was 77 per cent. of that of the previous year.
In 1894 production was 93 per cent. of that of the previous year.
In 1896 production was 91 per cent. of that of the previous year.
In 1904 production was 92 per cent. of that of the previous year.

The year 1893 shows the greatest shrinkage over its predecessor, and yet its production was 77 per cent. of the output of 1892. In the nine years of decreased production taken together the production averaged 89 per cent. of that for the previous year. The production of 1907 was 25,781,361 tons. If 1908 shows a shrinkage similar to that of 1893 the output should be 19,851,648 tons. If this year follows the average of decline of the nine other years of shrinkage the production should be 22,945,411 tons. The country at large is presumed to be in vastly better financial condition than in 1893, and the use of the average figure would seem to be justified.

The British Iron Market.—Reports at the end of January indicated a slight sentimental improvement in the British iron trade, though the quietness of the market contrasted sharply with the buoyancy and activity prevailing in the first month of 1907. Cleveland pig iron warrants sold as low as 47s. 6d. in the last week of January this year, while Cleveland No. 3 iron sold by makers brought close to 48 shillings. The hematite pig iron market continues depressed, and there is little prospect of early betterment. Stocks of Cleveland pig iron in public stores on January 30 were 100,138 tons, as compared with 512,200 tons at the end of January, 1907. In the finished material market the prospect of a strike at shipyards has been an unfavorable influence. Rails are in a somewhat better demand than other classes of products. In general makers are disposed to maintain prices at the reduced figures reached earlier in the year for angles, plates and bars.

Trade Publications.

Special Goods. — William A. Locke, 100 William street, New York City. Pamphlet. Devoted to special goods and small machine parts of brass, copper, steel or iron. All work being special, no catalogue is issued, but a tab-indexed card is inclosed bearing the name William A. Locke and its index guide, "Special Goods."

Valves.—Jenkins Bros., 71 John street, New York City. Pamphlet. Relates to extra heavy valves for pressures from 150 to 300 lb., and gives illustrations of brass globe, angle, check and Y or blow-off valves, and iron body globe and angle valves, together with prices and dimensions.

Hand Shapers.—Burke Machinery Company, Cleveland, Ohio. Circulars. One for insertion in binder deals with the Maltener hand shaper and two-spindle miller, which was described and illustrated in *The Iron Age*, August 1, 1907, and the other shows a surface grinder, a pump and a Baker-Resek saw, patterns and castings for the manufacture of which are for sale by the company.

Suction Gas Producers.—Wile Power Gas Company, Rochester, N. Y. Catalogue A, section 3. Describes and illustrates the company's types A and B suction gas producers, their operation and construction, characteristics, the fuels used, and their parts. The type A producers are made in 35 to 150 hp. sizes, and the type B in 200 to 500 hp. sizes.

Punches.—Geo. F. Marchant, Lake and Elizabeth streets, Chicago, Ill. Leaflet. Entitled "A Sermon on Punches." States the merits of New Process punches and gives a list of a few concerns using them.

Electrical Equipment.—Westinghouse Electric & Mfg. Company, Pittsburgh, Pa. Circulars for insertion in binder, as follows: No. 1017 (revised edition), alternating current potential regulators; No. 1059, electric motor vehicle equipments; No. 1084, Westinghouse series alternating arc light system; No. 1099 (revised edition), type R direct current motors for constant speed service; No. 1102-A, direct current multiple arc lamps for 110 and 220 volts; No. 1110 (revised edition), Westinghouse catenary line construction; No. 1122, standard three-point railroad diverter; No. 1124 (revised edition), No. 121-A railroad motors for direct current service; No. 1128 (revised edition), small power motors for alternating and direct current circuits; No. 1130 (revised edition), electrostatic voltmeters; No. 1140, small generating sets, type S-B generators and Acme engines; No. 1141, small direct current generating sets, A B C engines and type S generators; No 1142, machine tool controllers for direct current single-voltage circuits; No. 1143, regulating and reversing controllers for direct current motors in crane, hoisting and similar service; No. 1144, direct current mill motors; No. 1145, Westinghouse metallic flame arc lamp; No. 1146, type E electrolytic lightning arresters, and No. 1148, Cooper-Hewitt mercury rectifiers.

Electric Motors.—B. F. Sturtevant Company, Hyde Park, Mass. Two bulletins. No. 144 gives an illustrated description and dimension tables of eight-pole type electric motors, and No. 147 deals similarly with electric motors of bi-polar and four-pole types.

Ammonia Fittings and Supplies.—York Mfg. Company, York, Pa. Second edition, fitting catalogue. Size 6 x 9 in.; pages 128. Devoted to the company's line of ice-making and refrigerating supplies, of which illustrations, specifications and dimension tables are given. The products listed include globe, angle, tee, expansion and check valves, ammonia tees, crosses, elbows, flanges, couplings, unions, return bends, expansion joints, headers, freezing tanks, special fittings, condensers, brine coolers, receivers, oil separators, hoists, cans and can fillers, agitators, air compressors, engines, boilers, &c. Some 14 pages of tables and special information and a complete index are appended.

Hammers and Engines.—Parker Hoist & Machine Company, 971 North Francisco avenue, Chicago, Ill. Pamphlet. Pertains mainly to Harthorn helve hammers, which are made in four types, A, B, C and D, these having 25, 40, 60 and 80 lb. hammers. The company's gasoline engine is also illustrated, and the advantages claimed for it are enumerated.

Thermit.—Goldschmidt Thermit Company, 90 West street, New York City. Pamphlet. Describes various applications of Thermit in foundry practice, and states that the chief value of it in such work consists in the fact that the high heat of 5400 degrees F. can be applied anywhere and without apparatus of any kind, to increase the temperature of iron and steel and facilitate the introduction of other refractory metals which it is desired to alloy with the metal for special purposes.

High Pressure Blowers.—B. F. Sturtevant Company, Hyde Park, Mass. Bulletin No. 152. Contains an illustrated description of the single impeller blower, which is claimed to be the only blower of this type without internal contact. Sectional diagrams are used to make clear the explanation given of the operation. The company is also distributing with its compliments its February issue of the Sturtevant daily cupola record, which it will be glad to send to foundries desiring copies for preserving a monthly record of the performance of their cupolas.

Iron and Industrial Stocks.

NEW YORK, February 11, 1908.

The depressing influence of the President's message was felt with even greater effect in the past week, especially after the belief became general that it had chilled many indications of gradually returning confidence in business circles. Prices drooped steadily, and on Monday of this week stocks were poured out in considerable volume, causing prices to recede quite materially. The range of prices on active industrial stocks from Thursday of last week to Monday of the present week was as follows: United States Steel common 26½ to 28, preferred 89⅛ to 91½; Car & Foundry common 26⅛ to 28⅝; Locomotive common 32½ to 36, ex-dividend, preferred 87½ to 88½; Steel Foundries common 5 to 5½, preferred 29 to 30½; Cambria Steel 27⅜ to 28; Colorado Fuel 16⅞ to 18½; Crucible Steel 4¾ to 5⅛, preferred 35⅝ to 37; Pressed Steel common 17¼ to 20, preferred 69⅞ to 75; Railway Spring common 23¾ to 24⅞; Republic common 15 to 16¼, preferred 67 to 68; Sloss-Sheffield common 37 to 38⅛; Cast Iron Pipe common 19 to 20, preferred 64 to 68½; Can common 4¼ to 4½, preferred 49 to 49½. Last transactions up to 1.30 p.m. to-day are reported at the following prices: United States Steel common 27⅜, preferred 90½; Car & Foundry common 27, preferred 86½; Locomotive common 32¾, preferred 87½; Colorado Fuel 16½; Pressed Steel common 18, preferred 70; Railway Spring common 23¾; Republic common 15, preferred 67; Sloss-Sheffield common 37; Cast Iron Pipe common 19, preferred 63½; Can common 4¼, preferred 46¾.

The special meeting of the stockholders of the American Steel Foundries, called for February 8, was adjourned until March 14, in compliance with the temporary injunction granted by Vice Chancellor Howell of New Jersey. The order granted by the Vice Chancellor requires the Steel Foundries to show cause why the proposed refinancing plan should not be enjoined. Suit was brought by a holder of preferred stock. E. H. Gary, chairman of the United States Steel Corporation, who is a heavy holder of preferred and common stock of the company, presided. In a short speech he said that the complainants in the court proceedings misunderstood the refinancing plan. A circular giving further information would be sent to every stockholder in a few days. The complainants, he added, appeared to be under the misapprehension that the directors were more interested in the preferred than in the common stock, but the contrary was true.

Dividends.—The Niles-Bement-Pond Company has declared a semiannual dividend of 3 per cent. on the common stock, payable 1½ per cent. March 20 and 1½ per cent. June 20; also the regular quarterly dividend of 1½ per cent. on the preferred stock, payable February.

The Pratt & Whitney Company has declared a quarterly dividend of 1½ per cent. on the preferred stock, payable February 15.

The Keystone Driller Company, Beaver Falls, Pa., has declared a dividend of 10 per cent.

National Metallurgic Company Receivership.—At Pittsburgh, February 8, in United States District Court, Charles D. Thompson, Montclair, N. J., and Frank A. Berthold, New York, were appointed ancillary receivers in the Western District of Pennsylvania for the National Metallurgic Company, a New Jersey corporation, with New York offices at 43 Exchange place. The company has an uncompleted plant at Aspinwall, near Pittsburgh, for the conversion of fine iron ores and flue dust into nodules, after the process patented by Tom Cobb King. The company's nodulizing plant on Newark Bay, New Jersey, which has three rotary kilns, was recently placed in the hands of the same receivers. Messrs. Thompson and Berthold are also receivers for the Newfoundland Syndicate, 43 Exchange place, New York, of which the Pilley's Island Pyrites Company is a subsidiary. The latter company has been mining iron pyrites at Pilley's Island, Newfoundland, and shipping to various sulphuric acid works at Atlantic Coast points. The cinder from these works was afterward nodulized at the Newark Bay plant. The liabilities of the Pilley's Island Pyrite Company are $1,000,000, of which $250,000 is mortgage indebtedness and $500,000 is a liability to the Newfoundland Syndicate.

A 24,000-hp. steam turbine, which is probably the most powerful turbine for stationary service yet ordered, is reported to be under construction at the Mannheim Works of Brown, Boveri & Cie., for the Krupp steel works and blast furnace plant at Rheinhausen.

The Iron and Metal Trades

The Ore firms at Cleveland, who find their market largely among the merchant blast furnaces of Ohio and Pennsylvania, have fallen in with the general movement of producers of Pig Iron and Steel. The decision reached at Friday's meeting at Cleveland that no reduction from last year's prices is advisable for 1908 marks a departure in the Lake Ore trade. Ore buying was not expected to follow it, and time must be given for any effect of the action to appear farther down the line. That it will be an off year in Ore is a foregone conclusion, and thus the hunt by consumers for other than lake sources of supply may not be vigorous. At present Lake Superior Ores are being turned into Pig Iron at about 40 per cent. of the rate at which they came down the lakes last year. Not a few furnaces have Ore in their yards or on dock at Lake Erie sufficient to last them into next fall.

Apart from the Ore meeting interest has centered this week in a conference of Pig Iron producers of the Central West and the Chicago District, held at Cleveland Saturday. The previous effort in this territory to maintain a stable market had not been successful. Some of the causes of irregularity have now been removed, and the furnace companies expect the action of the Ore men to be of some avail in holding prices on a $17 Valley basis for No. 2 Foundry Iron. Reports of price cutting in Central territory, both on Northern and Southern Pig Iron have been rife of late, but new business actually showed a shrinkage from the January rate. The fact that stocks increased somewhat last month, with production of non-Steel making Irons less than 40 per cent. of the usual is significant.

Southern makers have of late received less than their usual percentage of orders in Foundry and Forge grades. All Pig Iron markets have been dull, in fact. In the East Pipe makers have been buyers on a moderate scale, as they have been at intervals for some time.

The Pennsylvania Railroad's Rail order for 1908 has been placed, 55,000 tons being distributed among four mills. The question of discard is not a factor. The mills are asked to furnish some Open Hearth Rails on this order, but none is now prepared to do this, though the Steel Corporation expects to roll such Rails at Gary in September. Two Rail contracts for about 60,000 tons each are about closed, and other roads are expected soon to fall in line. In Light Rails the mills have done a surprising business.

In general, finished lines have shown some improvement upon January, even though slight, and January in turn was better than December. Consumers of important products into which Iron and Steel enter are yet to pass on prices, which thus far have not been seriously tested.

The Wire and Tin Plate trades still lead in activity. Of the latter product important consumers predict a consumption in 1908 not far from that of last year.

Wrought Pipe mills have found it necessary to increase their active capacity. The Lorain, Ohio, plant of the Steel Corporation, has started up in the past week.

Railroad bridge work in the West amounting to 7500 tons has been booked, but current business is less than 25 per cent. of the fabricating capacity of the country.

Considerable buying of Cast Iron Pipe is reported, about a normal business for February being done. New Britain opened bids this week on 8000 tons and 4000 tons will be wanted for Cuba. Indianapolis, Ind., has just bought 4000 tons.

A Comparison of Prices.

Advances Over the Previous Month in Heavy Type, Declines in Italics.

At date, one week, one month and one year previous.

	Feb. 12, 1908.	Feb. 5, 1908.	Jan. 8, 1908.	Feb. 13, 1907.
PIG IRON, Per Gross Ton:				
Foundry No. 2, Standard, Philadelphia	$18.25	$18.25	$18.25	$26.00
Foundry No. 2, Southern, Cincinnati	*15.75*	15.75	16.25	26.00
Foundry No. 2, Local, Chicago	18.00	18.00	18.00	25.50
Bessemer, Pittsburgh	*17.90*	17.90	18.90	22.85
Gray Forge, Pittsburgh	*16.00*	16.15	17.40	22.25
Lake Superior Charcoal, Chicago	*21.50*	21.00	22.50	27.00
BILLETS, &c., Per Gross Ton:				
Bessemer Billets, Pittsburgh	28.00	28.00	28.00	29.50
Forging Billets, Pittsburgh	30.00	30.00	30.00	36.00
Open Hearth Billets, Phila	**30.40**	30.40	30.00	33.00
Wire Rods, Pittsburgh	**35.00**	35.00	34.00	37.00
Steel Rails, Heavy, Eastern Mill	28.00	28.00	28.00	28.00
OLD MATERIAL, Per Gross Ton:				
Steel Rails, Melting, Chicago	**13.00**	13.00	12.00	18.00
Steel Rails, Melting, Phila	**14.00**	13.50	11.50	18.75
Iron Rails, Chicago	**17.50**	17.00	15.00	25.00
Iron Rails, Philadelphia	**18.00**	17.50	16.50	27.50
Car Wheels, Chicago	*18.50*	18.50	19.00	23.50
Car Wheels, Philadelphia	*17.00*	17.00	19.00	23.00
Heavy Steel Scrap, Pittsburgh	14.00	14.00	....	18.00
Heavy Steel Scrap, Chicago	**12.50**	12.50	10.75	16.00
Heavy Steel Scrap, Philadelphia	**14.00**	13.50	11.50	18.50
FINISHED IRON AND STEEL, Per Pound:	Cents.	Cents.	Cents.	Cents.
Refined Iron Bars, Philadelphia	*1.65*	1.65	1.75	1.93½
Common Iron Bars, Chicago	*1.65*	1.65	1.75	1.81½
Common Iron Bars, Pittsburgh	*1.50*	1.50	1.60	1.80
Steel Bars, Tidewater, New York	1.76	1.76	1.76	1.74½
Steel Bars, Pittsburgh	1.60	1.60	1.60	1.60
Tank Plates, Tidewater, New York	1.86	1.86	1.86	1.84½
Tank Plates, Pittsburgh	1.70	1.70	1.70	1.70
Beams, Tidewater, New York	1.86	1.86	1.86	1.84½
Beams, Pittsburgh	1.70	1.70	1.70	1.70
Angles, Tidewater, New York	1.86	1.86	1.86	1.84½
Angles, Pittsburgh	1.70	1.70	1.70	1.70
Skelp, Grooved Steel, Pittsburgh	1.70	1.70	1.70	1.85
Skelp, Sheared Steel, Pittsburgh	1.80	1.80	1.80	1.95
SHEETS, NAILS AND WIRE, Per Pound:	Cents.	Cents.	Cents.	Cents.
Sheets, No. 27, Pittsburgh	2.40	2.40	2.40	2.50
Wire Nails, Pittsburgh	2.05	2.05	2.05	2.00
Cut Nails, Pittsburgh	2.00	2.00	2.00	2.05
Barb Wire, Galv., Pittsburgh	2.50	2.50	2.50	2.45
METALS, Per Pound:	Cents.	Cents.	Cents.	Cents.
Lake Copper, New York	*13.37½*	13.75	13.87½	25.12½
Electrolytic Copper, New York	*13.37½*	13.62½	13.75	24.87½
Spelter, New York	**4.90**	4.70	4.40	7.00
Spelter, St. Louis	**4.75**	4.55	4.27½	7.80
Lead, New York	**3.75**	3.75	3.65	6.30
Lead, St. Louis	**3.75**	3.60	3.60	6.10
Tin, New York	**29.50**	28.60	26.75	42.40
Antimony, Hallett, New York	**9.00**	9.00	8.75	25.00
Nickel, New York	45.00	45.00	45.00	45.00
Tin Plate, 100 lb., New York	$3.89	$3.89	$3.89	$4.09

Chicago.

FISHER BUILDING, February 11, 1908.—(*By Telegraph.*)

Structural Material and Bar Iron hold the lead over other mill product in point of tonnage closed. Contracts for nearly 7500 tons of the former have been placed, the majority of it being for railroad bridge work, and there are in addition about 2400 tons of similar specifications now in the market for figures. The Structural mill of the Illinois Steel Company will be started up next week to roll the specifications that have accumulated during the several weeks it has been idle. A considerable tonnage of Bar Iron was booked preceding the advance of $2 a ton agreed upon last week by the Western Bar Iron interests. Specifications against these orders, if generously furnished, will suffice to keep the mills more actively engaged than they have been. New business in Steel Bars, Tubular Goods, Plates and Sheets is coming in slowly, though in all lines slight improvement is noted. The starting up this week of the Sheared Plate mill, Slabbing mill and five Open Hearth furnaces at the South Works of the Illinois Steel Company marks the renewal of activity at that plant, the finishing departments of which have all been closed since about the middle of January. How long they will continue in operation will depend on business developments. Bids are being taken this week on 6500 tons of Cast Iron Pipe for water plants by various municipalities, besides which there is more inquiry for Gas Pipe, the demand for which has been extremely quiet. Notwithstanding the absence of a consumptive demand, prices of Scrap material hold firm, with a tendency toward advance on mill grades.

Railroad offerings are being readily absorbed, the tonnage being taken principally by dealers.

Pig Iron.—Aside from three or four inquiries for amounts ranging from 1000 to 1500 tons, apparently put out as market feelers, the developments of the past week furnished no semblance of activity in Pig Iron. The few sales reported comprise carload or slightly larger lots at prices ranging from $13 to $13.50, Birmingham, for No. 2 Foundry, and $18 to $18.50, Chicago, for No. 2 Northern. One lot of 300 tons No. 1 Foundry was placed by a Northern furnace at $18.50, Chicago. Rumors are heard of Southern No. 2 being offered at $12.50, Birmingham, but they are unconfirmed. The fact is that there is not enough business in sight to tempt producers to depart far from their established prices. Some of the leading furnaces continue to quote $13.50, Birmingham, but few sales are being made above $13, except on preferred brands. The question of a reduction of Southern freight rates on Pig Iron is up for consideration, and it is understood that the railroads are actively investigating the claims put forward by shippers in behalf of a revision of tariffs. A report purporting to be authoritative to the effect that the idle stack of the Federal Furnace Company would be blown in this week is wholly without foundation. No date has been fixed for its resumption. The following prices are for February and March delivery, f.o.b. Chicago:

Lake Superior, Charcoal	$21.50 to $22.00
Northern Coke Foundry No. 1	18.50 to 19.00
Northern Coke Foundry, No. 2	18.00 to 18.50
Northern Coke Foundry, No. 3	17.50 to 18.00
Northern Scotch, No. 1	19.00 to 19.50
Southern Coke, No. 1	17.85 to 18.35
Southern Coke, No. 2	17.35 to 17.85
Southern Coke, No. 3	16.85 to 17.35
Southern Coke, No. 4	16.35 to 16.85
Southern Coke, No. 1 Soft	17.85 to 18.35
Southern Coke, No. 2 Soft	17.35 to 17.85
Southern Gray Forge	15.35 to 15.85
Southern Mottled	15.10 to 15.60
Malleable Bessemer	18.50 to 19.00
Standard Bessemer	20.40 to 20.90
Jackson Co. and Kentucky Silvery, 6%	21.40 to 21.90
Jackson Co. and Kentucky Silvery, 8%	23.40 to 23.90
Jackson Co. and Kentucky Silvery, 10%	25.40 to 25.90

Billets and Rods.—The demand for Steel is limited to incidental orders for current requirements, and the market seems to be barren of inquiries that would indicate interest on the part of consumers in forward tonnage. On the very moderate tonnage of Forging Billets moving prices are reported to be firm at $33 to $34, Chicago. Wire Rods remain unchanged at the following quotations: Bessemer, $35; Basic, $36; Chain, $37, Pittsburgh.

Rails and Track Supplies.—Inquiries comprising a moderate tonnage have come into the market, the character of which seems to portend the development of some business from electrical lines, logging roads, and the smaller railroad interests. It seems quite probable also that the round lots of Standard Section Rails recently noted in this report as in the market, will be placed before long. An order for 1200 tons of High T-Sections for street railroad work has been booked by the Pennsylvania Steel Company. The demand for Light Rails continues quiet, with more or less irregularity in prices, due to the competition of rerolling mills. A little better inquiry for Track Fastenings is noted. We quote as follows: Angle Bars, accompanying Rail orders, 1908 delivery, 1.65c.; car lots, 1.75c. to 1.85c.; Spikes, 1.90c. to 2c., according to delivery; Track Bolts, 2.40c. to 2.50c., base, Square Nuts, and 2.55c. to 2.65c., base, Hexagon Nuts. The store prices on Track Supplies range from 0.15c. to 0.20c. above mill prices. Light Rails, 25 to 45 lb., $28; 20-lb., $29; 16-lb., $30; 12-lb., $31. Standard Sections, $28, f.o.b. mill, full freight to destination.

Structural Material.—Considerable improvement is noted in the aggregate tonnage booked by the various interests during the week. Building projects are still backward, and but little business has developed from this source, the majority of tonnage coming from the railroads for the construction of bridges. A contract for 3000 tons for the rebuilding of the Mississippi River bridge at Clinton, Iowa, was placed by the Chicago & Northwestern Railway with the Pennsylvania Steel Company. Contracts were placed for 2500 tons by the Chicago, Milwaukee & St. Paul with the McClintic-Marshall Construction Company for bridges along the line of its new Pacific Coast extension. Other contracts aggregating 1100 tons of bridge Material are being placed to-day by the same road, and the Wisconsin Steel Bridge Company has also been awarded a contract for 125 tons. Besides some Material for highway bridges, the American Bridge Company has within a week received specifications from the railroad for 700 tons, and an order for 200 tons for a public building in Jackson County, Mo. Bids have been asked on 1400 tons to be used by the Chicago & Northwestern Railway for the construction of a bridge over the Platte River, also an additional 1000 tons for new bridge work on the Western lines of the Chicago, Milwaukee & St. Paul. The Structural mill of the Illinois Steel Company, which has been idle for several weeks, is scheduled for resumption next week, enough specifications having accumulated in the meantime to warrant its starting up. Prices from store are quoted without change at 2.05c. to 2.10c., and mill prices at Chicago are as follows: Beams and Channels, 3 to 15 in., inclusive, 1.88c.; Angles, 3 to 6 in., ¼-in. and heavier, 1.88c.; larger than 6 in. on one or both legs, 1.98c.; Beams, larger than 15 in., 1.98c.; Zees, 3 in. and over, 1.88c.; Tees, 3 in. and over, 1.93c., in addition to the usual extras.

Plates.—Orders continue to be restricted to small lots for present consumption. The development of new projects carrying any considerable tonnage of Plates is extremely slow, and the movement of store stocks is of such a tardy nature that jobbers are not inclined to contract ahead for more tonnage than is actually needed to maintain moderate assortments. After a period of idleness lasting several weeks the Sheared Plate mill of the Illinois Steel Company starts up to-day, and to supply it with material the Slabbing mill and five Open Hearth furnaces will be put in operation. We quote for shipment from mill as follows: Tank Plates, ¼-in. and heavier, wider than 6¼ and up to 100 in. wide, inclusive, car lots, Chicago, 1.88c. to 2.08c.; 3-16 in., 1.98c. to 2.18c.; Nos. 7 and 8 gauge, 2.03c. to 2.23c.; No. 9, 2.13c. to 2.33c.; Flange quality, in widths up to 100 in., 1.98c. to 2.08c., base, for ¼-in. and heavier, with the same advance for lighter weights; Sketch Plates, Tank quality, 1.98c. to 2.18c.; Flange quality, 2.08c. Store prices on Plates are as follows: Tank Plates, ¼-in. and heavier, up to 72 in. wide, 2.10c. to 2.20c.; from 72 to 96 in. wide, 2.20c. to 2.30c.; 3-16 in. up to 60 in. wide, 2.20c. to 2.35c.; 72 in. wide, 2.40c. to 2.50c.; No. 8 up to 60 in. wide, 2.20c. to 2.25c.; Flange and Head quality, $0.25c. extra.

Sheets.—The needs of the trade are seemingly fully supplied by the hand to mouth orders which constitute the bulk of the business coming to the mills. Both manufacturers and jobbers are buying very conservatively, with little disposition to anticipate the future development of trade. The local mill continues in operation, but is not being run to full capacity. Notwithstanding the pressure of present conditions, prices are reported to be well maintained by the mills. We quote mill shipments as follows, Chicago: Blue Annealed, No. 10, 1.98c.; No. 12, 2.05c.; No. 14, 2.08c.; No. 16, 2.18c.; Box Annealed, Nos. 17 to 21, 2.43c.; Nos. 22 to 24, 2.48c.; Nos. 25 to 26, 2.53c.; No. 27, 2.58c.; No. 28, 2.68c.; No. 29, 2.78c.; No. 30, 2.88c.; Galvanized Sheets, Nos. 10 to 14, 2.63c.; Nos. 15 and 16, 2.83c.; Nos. 17 to 21, 2.98c.; Nos. 22 to 24, 3.13c.; Nos. 25 and 26, 3.33c.; No. 27, 3.53c.; No. 28, 3.73c.; No. 30, 4.23c. Black Sheets from store: Blue Annealed, No. 10, 2.20c.; No. 12, 2.25c.; No. 14, 2.30c.; No. 16, 2.40c.; Box Annealed, Nos. 18 to 21, 2.60c.; Nos. 22 to 24, 2.65c.; No. 26, 2.70c.; No. 27, 2.75c.; No. 28, 2.85c.; No. 30, 3.25c. Galvanized from store: Nos. 10 to 16, 3c.; Nos. 18 to 20, 3.15c.; Nos. 22 to 24, 3.30c.; No. 26, 3.50c.; No. 27, 3.70c.; No. 28, 3.90c.; No. 30, 4.40c. to 4.45c.

Bars.—The Bar Iron mills report a decided increase in the amount of tonnage booked within the past week or 10 days, and it is stated that the aggregate was greater than the combined business of the previous 60 days. This spurt of activity doubtless resulted from an anticipation of the advance of $2 a ton announced last week by the Western Bar Iron interests, by which the price was raised from 1.55c. to 1.65c., Chicago. Specifications are being offered in moderate volume, which has, however, not increased sufficiently to permit the uninterrupted operation of the mills. Specifications for Steel Bars are coming in slowly, and but few of the Western mills are now running. Quotations, Chicago, are as follows: Steel Bars, 1.78c., with half extras; Iron Bars, 1.65c.; Hoops, 2.18c., extras as per Hoop card; Bands, 1.78c., as per Bar card, half extras; Soft Steel Angles and Shapes, 1.88c., half extras. Store prices are as follows: Bar Iron, 2.10c. to 2.25c.; Steel Bars, 2c. to 2.10c.; Steel Bands, 2c., as per Bar card, half extras; Soft Steel Hoops, 2.35c. to 2.45c., full extras.

Merchant Pipe.—The best that can be said of the situation in Tubular Goods is that business is slowly increasing. Each week shows a slight advance over the preceding one, but when measured in tonnage the gains made are not particularly significant. The recent re-establishment of prices has developed a little stronger tone, and as soon as weather conditions improve a better demand is looked for. Store prices continue relatively low and irregular. It is likely, however, that the existing demoralization of store prices will soon be corrected by the establishment of a better understanding between jobbers. The following mill discounts are quoted: Black Pipe, ¾ to 6 in., 71.2; 7 to 12 in., 68.2; Galvanized, ¾ to 6 in., 61.2. These discounts are subject to one point on the base. From store, in small lots, Chicago jobbers quote 72 to 72½ per cent. on Black Steel Pipe, ¾ to 6 in. About four points advance above these prices is asked for Iron Pipe.

Boiler Tubes.—Reflecting the prevailing inactivity in new boiler construction, there is only a moderate demand for Merchant Tubes. Jobbers' stocks are supplying a large part of the incidental requirements of boiler makers, which consist of small lots for specific use. Orders for Locomotive Tubes are strictly limited to the imperative needs

of motive power maintenance. Mill quotations for future delivery, on the base sizes, are as follows: 2⅜ to 5 in., in carload lots, Steel Tubes, 63.2; Iron, 50.2; Seamless, 49.2; 2½ in. and smaller, and lengths over 18 ft., and 2½ in. and larger, and lengths over 22 ft., 10 per cent. extra. Store prices are as follows:

	Steel.	Iron.	Seamless.
1 to 1½ in.	35	35	35
1¾ to 2¼ in.	50	35	35
2½ in.	52½	35	35
2¾ to 5 in.	60	47½	47½
6 in. and larger	50	35	..

Merchant Steel.—Specifications on held up contracts are coming in a little more freely, especially on Tire Steel from the vehicle industries. To a limited extent similar improvement is noted in the demand from implement makers, though trade as a whole is only moderate. Quotations are as follows: Planished or Smooth Finished Tire Steel, 1.98c.; Iron Finish up to 1½ x ½ in., 1.93c., base, Steel card; Iron Finish, 1½ x ½ in. and larger, 1.78c., base, Tire card; Channels for solid Rubber Tires, ¾ to 1 in., 2.28c., and 1⅛ in. and larger, 2.18c.; Smooth Finished Machinery Steel, 2.18c.; Flat Sleigh Shoe, 1.93c.; Concave and Convex Sleigh Shoe, 2.08c.; Cutter Shoe, 2.46½c.; Toe Calk Steel, 2.33c.; Railroad Spring, 1.98c.; Crucible Tool Steel, 7¼c. to 8c., and still higher prices are asked on special grades. Shafting, 54 per cent. off in car lots; 48 per cent., less than car lots, base territory delivery.

Cast Iron Pipe.—Among the municipalities now in the market for a fair sized tonnage of Water Pipe are Cleveland, Ohio, 1200 tons; Detroit, Mich., 1200 tons, to be let February 18: Toronto, Canada, 4000 tons, and Berrien Springs, Mich., 300 tons. At a letting of 1600 tons last week at Winnipeg, Man., the Stanton Iron Works bid of $70,839 was the lowest. There is a little more inquiry for Pipe from gas plants, with some prospective business of good tonnage in sight for the near future. We quote, per net ton, Chicago, as follows: Water Pipe, 4-in., $30; 6 to 12 in., $29; 16-in. and up, $28, with $1 extra for Gas Pipe.

Old Material—So far as prices are concerned, the market remains practically stationary. In its present condition only the stimulus of demand from consumers is needed to raise the level of values all along the line. Of the 8500 tons of railroad material that came into the market last week, nearly all, it is understood, was taken by dealers who are storing and holding it for better prices. About the only tonnage taken by consuming interests was purchased by the rolling mills, but the entire transactions of this character involved but a moderate amount of material. Included in these sales was one lot of 300 tons of Iron Car Axles at $18, while No. 1 Wrought brought a little over $12.50. Included in the railroad lists to be offered this week are 2340 tons from the Wabash, in which there are 1400 tons of Rerolling Rails and 450 tons from the Wisconsin Central. There is very little demand for Cast Scrap, but Melting Steel is more active and holds firm at current quotations. We quote, per gross ton, f.o.b. Chicago, as follows:

Old Iron Rails	$17.50 to $18.50
Old Steel Rails, rerolling	13.00 to 14.00
Old Steel Rails, less than 3 ft.	13.00 to 14.00
Relaying Rails, standard sections, subject to inspection	22.00 to 25.00
Old Car Wheels	18.50 to 19.50
Heavy Melting Steel Scrap	12.50 to 13.50
Frogs, Switches and Guards, cut apart	12.25 to 13.25
Mixed Steel	9.50 to 10.50

The following quotations are per net ton:

Iron Fish Plates	$15.00 to $16.00
Iron Car Axles	17.00 to 18.00
Steel Car Axles	16.00 to 17.00
No. 1 Railroad Wrought	12.50 to 13.50
No. 2 Railroad Wrought	10.25 to 11.25
Railway Springs	11.50 to 12.50
Locomotive Tires, smooth	15.00 to 16.00
No. 1 Dealers' Forge	9.75 to 10.75
Mixed Busheling	8.00 to 9.00
Iron Axle Turnings	7.25 to 8.25
Soft Steel Axle Turnings	7.25 to 8.25
Machine Shop Turnings	7.25 to 8.25
Cast Borings	5.00 to 6.00
Mixed Borings, &c.	5.00 to 6.00
No. 1 Mill	7.50 to 8.50
No. 2 Mill	6.50 to 7.50
No. 1 Boilers, cut to Sheets and Rings	7.50 to 8.50
No. 1 Cast Scrap	13.00 to 14.00
Stove Plate and Light Cast Scrap	11.50 to 12.50
Railroad Malleable	11.25 to 12.25
Agricultural Malleable	10.50 to 11.50
Pipes and Flues	9.00 to 10.00

Metals.—Under the pressure of continued inactivity there has been a slight recession in Copper prices. Even the largest users are buying only small lots for immediate use, and even carload orders are quite infrequent. Spelter is somewhat more active, and has advanced about ¼c. All other metals hold pretty evenly, with no marked increase in demand. We quote as follows: Casting Copper, 14c.; Lake, 14½c. to 14¾c., in car lots for prompt shipment; small lots, ¼c. to ⅜c. higher; Pig Tin, car lots, 30c.; small lots, 31½c.; Lead, Desilverized, 4c. to 4.05c., for 50-ton lots; Corroding, 5.15c. to 5.25c., for 50-ton lots; in car lots, 2¼c. per 100 lb. higher; Spelter, 4.85c.; Cookson's Antimony, 13c., and other grades, 11c. to 11½c.; Sheet Zinc is $7 list, f.o.b. La Salle, in car lots of 600-lb. casks. On Old Metals we quote: Copper Wire, 13½c.; Heavy Copper, 13½c.; Copper Bottoms, 12c.; Copper Clips, 12c.; Red Brass, 13c.; Yellow Brass, 10½c.; Light Brass, 6½c.; Lead Pipe, 3¾c.; Zinc, 3¾c.; Pewter, No. 1, 21c.; Tin Foil, 23c.; Block Tin Pipe, 25c.

Philadelphia.

PHILADELPHIA, PA., February 10, 1908.

The placing of orders for 55,000 tons of Steel Rails, by the Pennsylvania Railroad, which are to be rolled under entirely new specifications, is announced. These, with the 30,000 tons left over from last year, will give that road 85,000 tons of Rails for use during the present year. The order was for repairs and replacements only, and does not cover any extensions or improvements. The company has reserved the right to increase the present order if improved conditions during the year warrant such action. The order was divided as follows: United States Steel Corporation, 27,500 tons, of which 14,500 tons will be supplied by the Edgar Thomson Works, and 13,000 tons by the Illinois Steel Company; 11,550 tons each to the Maryland Steel Company and the Cambria Steel Company, and 4400 tons to the Lackawanna Steel Company. An important conference bearing on the question of short delivery weights, in which the Pig Iron and Coke producers were jointly interested with the consumers of these crude materials, was held in this city during the past week, when the weight committees of the New England, Philadelphia and Pittsburgh Foundrymen's associations and the representatives of producers and transportation companies met and discussed the question of shortages in the delivered weights of those materials, and which resulted in the appointment of a committee composed of representatives of the several interests, who will take up this important question and endeavor to suggest some method of overcoming this difficulty. At a later meeting of the Local Foundrymen's Association a resolution was unanimously passed recommending that Pig Iron producers unite and establish a minimum price for delivery of Pig Iron at certain fixed points, so that they would have a basis on which they could make their purchases, which action illustrates pretty clearly the position taken by the foundry interests on the question of fixed prices.

Pig Iron.—New business comes out rather slowly, and the market shows practically no change. Buying is still confined to small quantities for early delivery, and the demand has been almost entirely confined to the Foundry grades. With production showing a further decline during the month of January, and prices being firmly held by the leading interests, the producers feel that they have the situation pretty well in hand. Outside interests do not appear to be pushing the market as strongly as they were, and it is believed by some that they have pretty nearly taken as much tonnage as they want at the price. At the same time buyers are pursuing a conservative policy, and will not, as a rule, place orders for forward delivery, or for any greater tonnage than they have orders in sight. The Pipe interests which have been active buyers in the past few weeks have quieted down for the time, and while they will no doubt require more tonnage to take care of the business on hand, they do not seem to be in any hurry to place further orders. Southern Iron, as far as sales in this territory are concerned, has been inactive, as have also the Virginia Irons. Sales have been largely confined to Nos. 2 X and 2 Plain Foundry Irons. A little No. 1 Foundry has been sold. The greater proportion of orders taken recently are for lots under 100 tons, with a few scattered ones for 200 and 300 tons. Prices are being firmly maintained. No. 2 X Foundry is held at $18.25, delivered, as a minimum price, with No. 2 Plain at $17.75 to $18 for delivery in this territory. The demand for Forge Iron has again fallen off, the business reported in this grade having been extremely light. Prices, however, are strong at $16.50 to $16.75, delivered. Steel making Irons show no indications of activity. Basic Iron melters have their requirements pretty well covered, and are not in the market at the time. A little better inquiry, however, is to be noted for Low Phosphorus Iron, particularly misfit grades, but no business covering any large tonnage has been done. We quote for early delivery in buyers' yards, eastern Pennsylvania and adjoining territory, the following range of prices:

No. 2 X Foundry	$18.25 to $18.50
No. 2 Plain	17.75 to 18.00
No. 3 Foundry	17.25 to 17.50
Gray Forge	16.50 to 16.75
Basic	17.25
Low Phosphorus	24.00 to 25.00

Ferromanganese.—The demand continues very light and sales have been confined entirely to broken and small lots. Buyers of large tonnages are out of the market in this territory. Quotations for prompt shipment range from $47 to $49, Baltimore.

Steel.—New business does not come out very rapidly, although specifications on old orders are more numerous, and makers feel encouraged as to the general situation. The blooming mill of the Alan Wood Iron & Steel Company has again been shut down, but that company will light up two

or three Open Hearth furnaces this week in order to make some grades of Steel on which its stock of ingots has become depleted. Prices are being firmly held. Ordinary Steel for delivery in this territory is quoted at $30.40, while Forging Steel ranges from $32.40 to $33.40, according to analysis.

Plates.—There has been a better demand and makers are feeling more cheerful regarding future business. One mill reports orders during the past week as the best they have had in any week for several months past. Boiler and Bridge Plates seem to be in the most active demand, although quite a large share of the orders taken is for material of a miscellaneous character, and mills are reported as gaining somewhat on their production. The greater proportion of the business taken, however, is for prompt shipment. Prices are unchanged and range as follows:

	Carload. Cents.	Part carload. Cents.
Tank, Bridge and Boat Steel	1.85	1.90
Flange or Boiler Steel	1.95	2.05
Commercial Firebox	2.05	2.10
Marine	2.25	2.30
Locomotive Firebox Steel	2.35	2.40

The above are base prices for ¼-in. and heavier. The following extras apply:

	Extra per 100 lb.
3-16-in. thick	$0.10
Nos. 7 and 8, B. W. G.	.15
No. 9, B. W. G.	.25
Plates over 100 to 110 in.	.05
Plates over 110 to 115 in.	.10
Plates over 115 to 120 in.	.15
Plates over 120 to 125 in.	.25
Plates over 125 to 130 in.	.50
Plates over 130 in.	1.00

Structural Material.—A fair volume of orders continues to come out, and mills get about the same proportion of work from week to week. Large propositions are scarce, and the major portion of the business taken is made up of small and miscellaneous lots. Some small bridge and boat orders have been placed recently, but nothing new of any size has developed in the building line. Prices continue to be quoted at 1.85c. to 2c., according to specifications.

Sheets.—Business continues to be largely of a hand to mouth character, and mills continue to run at about half capacity only. No business for future delivery is being received. We quote prices for mill shipments, with a tenth extra for small lots, as follows: Nos. 18 to 20, 2.50c.; Nos. 22 to 24, 2.70c.; Nos. 25 to 26, 2.80c.; No. 27, 2.90c.; No. 28, 3c.

Bars.—The situation in the Bar Iron market has again assumed definite shape. The low prices which prevailed during the past two weeks did not bring out any great amount of business, and selling prices were down to a point at which some mills could take orders only at a loss. Prices for Refined Iron Bars have now been fixed at 1.50c., Pittsburgh, or 1.65c., delivered in Philadelphia territory, which makers say will be firmly held, and all lower quotations have been withdrawn. The demand, however, is light, and not much new business comes out, although it is believed that as soon as the trade is satisfied that the new base will be held, it will come into the market more freely.

Old Material.—The situation in the Old Material markets continues to improve, and prices are stronger all along the line and in some cases show a decided advance. Heavy Melting Steel has been sold in moderate tonnages at $14, delivered. Railroad Wrought, Turnings and Borings continue to be taken in medium sized lots, and prices of these materials have advanced about 50c. a ton. We quote for prompt delivery in buyers' yards, eastern Pennsylvania and adjoining territory, about as follows:

No. 1 Steel Scrap and Crops	$14.00 to $14.50
Low Phosphorus	18.00 to 18.50
Old Steel Axles	18.00 to 18.50
Old Iron Axles	23.00 to 24.00
Old Iron Rails	18.00 to 19.00
Old Car Wheels	17.00 to 17.50
Choice No. 1 R. R. Wrought	15.50 to 16.00
Machinery Cast	15.00 to 15.50
Wrought Iron Pipe	11.50 to 12.00
No. 1 Forge Fire Scrap	11.50 to 12.00
No. 2 Light Iron	8.50 to 9.00
Wrought Turnings	10.00 to 10.50
Stove Plate	13.50 to 13.75
Cast Borings	8.50 to 9.00
Grate Bars	12.50 to 13.00

Coke.—The demand for Coke continues light. Foundries are not using Coke very heavily, and consumption at some of the furnaces has stopped entirely. Sales, therefore, have been extremely small, and prices for prompt coke are, if anything, somewhat weaker. Foundry Coke is quoted at $2.25 to $2.75, at oven, while Furnace Coke ranges from $1.85 to $2.25, at oven. We quote for delivery in the Philadelphia territory the following range of prices:

Connellsville Furnace Coke	$4.05 to $4.50
Foundry Coke	4.50 to 5.00
Mountain Furnace Coke	3.75 to 4.10
Foundry Coke	4.10 to 4.60

An ice breaking car ferry for winter service is being built to operate on the St. Lawrence River between Prescott, Canada, and Ogdensburg, N. Y.

Pittsburgh.

PARK BUILDING, February 12, 1908.—(*By Telegraph.*)

Pig Iron.—Sentimentally, the market on Pig Iron may be stronger as the result of the meeting of furnace interests held in Cleveland last Saturday, but when it comes down to actual sales as low prices are being made as at any time in the last two months or more. The furnace interests at the meeting agreed to hold Bessemer Iron at $18, No. 2 Foundry at $17, and Basic at $17, all at Valley furnace; but on the other hand, Bessemer Iron is being offered from $17 up to $17.50 at furnace. No. 2 Foundry is quite freely offered at $16 or less at furnace, and Basic at $16, with a probability that this price could be shaded on a firm offer. We note a sale of 200 tons of Bessemer Iron at $16.85 at furnace, 100 tons at $17, 150 tons at the same price, and 50 tons at $17.10 at furnace. A large consumer is reported to have bought upward of 5000 tons of Malleable Bessemer at a low price and for extended delivery. We do not hear of any sales of Northern Forge which we quote at $16 to $16.25 Pittsburgh.

Steel.—The market is quiet, and there are no large inquiries. A serious accident has occurred at the Sheet Bar mill of the Youngstown Sheet & Tube Company, which will disable it for a short time. We quote Bessemer and Open Hearth Billets nominally at $28, Sheet and Tin Bars at $29 and Forging Billets $30, Pittsburgh.

Ferromanganese.—Owing to the large falling off in consumption of Ferro, due to the idleness of so many Steel plants, prices are weak and somewhat lower. About two weeks ago foreign Ferro sold on the basis of $46, Baltimore, or $47.95, Pittsburgh, but in the last few days from 75 to 100 tons of foreign 80 per cent. Ferro has been sold on the basis of about $47, Pittsburgh.

(*By Mail.*)

An important meeting of the Ore interests was held in Cleveland on Friday, February 7, at which all the leading Ore producers were represented, with the exception of one, with the result that 1907 prices on Ore were reaffirmed for this year. The interest that was not present at the meeting later agreed to maintain prices. Some of the furnaces have sold Pig Iron in the belief that Ore would be reduced, and it is now claimed that the prices at which this Iron was sold were below the actual cost of making it, based on present prices of Ore. The Ore meeting was followed by a meeting of the furnace interests, on Saturday, representatives of furnaces being present from the Pittsburgh and nearby districts. The action taken by the Ore producers in maintaining prices for this year was thoroughly discussed by the furnace men, with the result that new prices were agreed upon, these being $18, Valley furnace, for Bessemer; $17 for No. 2 Foundry, and $16.50 for Northern Forge. These are all Valley prices, the rate to Pittsburgh being 90c. a ton. It is stated that the Pig Iron market is now decidedly firmer and that some low prices sent out last week have since been withdrawn. There are still some lots of Bessemer Iron, Foundry and Forge that are being offered by dealers at lower prices than were agreed upon by the furnaces, but the aggregate is very small. The future of the market will depend largely on whether the furnace interests maintain the prices agreed upon, but it is stated that a determined effort will be made to hold the market on the different grades of Pig Iron on the basis noted above. New business in Finished Iron and Steel is showing a slight increase, but buying is still in small lots and for actual needs. A slightly better demand for Coke is reported, and prices are a shade firmer. The Scrap market is still holding quite firm, and the actual tonnage being sold is larger than for some time.

Muck Bar.—We do not hear of any new business, and we continue to quote best grades of Muck Bar, made from all Pig Iron, nominally at $28 to $29, Pittsburgh.

Ferromanganese.—A local Steel interest is reported to have bought 500 tons of foreign Ferro for forward delivery. We quote foreign 80 per cent. in large lots for extended delivery at $48 to $48.50, and small lots at $48.50 to $49, Pittsburgh.

Rods.—Although the demand is light, prices are firm, and we quote Bessemer Rods at $35, Open Hearth $36 and Chain Rods $37, f.o.b. Pittsburgh.

Skelp.—Owing to quiet conditions in the Pipe trade practically no new orders for Skelp are being placed. We quote: Grooved Steel Skelp, 1.60c.; Sheared Steel Skelp, 1.70c.; Grooved Iron Skelp, 1.80c., and Sheared Iron Skelp, 1.90c., f.o.b. Pittsburgh.

Steel Rails.—The Great Northern Railroad is in the market for 60,000 tons of Standard Sections. Actual tonnage in Standard Sections taken by the Carnegie Steel Company in the past week includes 4000 tons for the Pittsburgh & Lake Erie, 2500 tons for two railroad supply makers and 1000 tons for an Eastern coal company. It develops that the actual tonnage of Light Rails sold by the Carnegie Steel

Company in the first six weeks of this year was twice as large as the quantity sold by that company in the last six months of 1907. The company booked in the past week about 1400 tons. Regular prices on Light Rails, which are still being shaded about $3 a ton by the mills rerolling Rails, are as follows: 25 to 45 lb. Sections, $28; 20-lb., $29; 16-lb., $30, and 12-lb., $32. We quote Standard Sections at $28, at mill, and Angle Splice Bars at 1.65c., at mill.

Plates.—New business does not show much betterment, but is very light and for small lots only. The tonnage in Plates going to the Steel car concerns still continues fairly heavy, but this will show a decided falling off very soon, unless some orders are quickly placed for Steel cars. A large Steel car plant in Allegheny is now practically closed in all departments, owing to lack of orders. There is some price cutting being done, but as yet it is confined mostly to the narrow sizes. Regular prices are as follows: We quote: Tank Plates, ¼-in. thick, 6¼ in. up to 100 in. wide, 1.70c., base, at mills, Pittsburgh. Extras over this price are as follows:

	Extra per 100 lb.
Gauges lighter than ¼-in. to and including 3-16-in. Plates on thin edges	$0.10
Gauges Nos. 7 and 8	.15
Gauge No. 9	.25
Plates over 100 to 110 in.	.05
Plates over 110 to 115 in.	.10
Plates over 115 to 120 in.	.15
Plates over 120 to 125 in.	.25
Plates over 125 to 130 in.	.50
Plates over 130 in.	1.00
All sketches (excepting straight taper Plates varying not more than 4 in. in width at ends, narrowest end being not less than 30 in.)	.10
Complete Circles	.20
Boiler and Flange Steel Plates	.10
"A. B. M. A." and ordinary Firebox Steel Plates	.20
Still Bottom Steel	.30
Marine Steel	.40
Shell grade of steel is abandoned.	

TERMS.—Net cash 30 days. Pacific Coast base, 1.60c., f.o.b. Pittsburgh, with all rail tariff rate of freight to destination added, no reduction for rectangular shapes, 14 in. wide down to 6 in. of Tank, Ship or Bridge quality.

Structural Material.—A moderate demand is noted, but any work being placed consists mostly of jobs that cannot be held back any longer. Very little large new work is coming up, and the outlook in the Structural trade is only fair. The McClintic-Marshall Construction Company has taken about 2000 tons of viaduct and girder work for the Chicago, Milwaukee & St. Paul, and is now turning out material for the New York City piers, for which a contract was secured last fall, and which involves about 13,000 tons. We quote: Beams and Channels, up to 15 in., 1.70c.; over 15 in., 1.80c.; Angles, 3 x 2 x ¼ in. thick, up to 6 x 6 in., 1.70c.; 8 x 8 and 7 x 3½ in., 1.80c.; Zees, 3 in. and larger, 1.70c.; Tees, 3 in. and larger, 1.75c.; Bulb Angles and Deck Beams, 2c. Under the Steel Bar card Angles, Channels and Tees under 3 in. are 1.70c., base, for Bessemer and Open Hearth, subject to half extras on the Standard Steel Bar card.

Sheets.—There is some slight improvement in the demand for both Black and Galvanized Sheets, but new business is largely for mere current requirements. It is believed that early in March there will be a material improvement, as the trade will likely commence to buy Roofing Sheets in order to have stocks on hand when the building season opens up. It is stated that prices are in the main being held. We quote: Blue Annealed Sheets, No. 10 and heavier, 1.80c.; Nos. 11 and 12, 1.85c.; Nos. 13 and 14, 1.90c.; Nos. 15 and 16, 2c.; Box Annealed, Nos. 17 to 21, 2.25c.; Nos. 22 to 24, 2.30c.; Nos. 25 and 26, 2.35c.; No. 27, 2.40c.; No. 28, 2.50c.; No. 29, 2.60c.; No. 30, 2.70c. Galvanized Sheets: Nos. 10 and 11, 2.45c.; Nos. 12 and 14, 2.55c.; Nos. 15 and 16, 2.65c.; Nos. 17 to 21, 2.80c.; Nos. 22 and 24, 2.95c.; Nos. 25 and 26, 3.15c.; No. 27, 3.35c.; No. 28, 3.55c.; No. 29, 3.70c.; No. 30, 3.95c. No. 28 Painted Roofing Sheets $1.75 per square, and Galvanized Roofing Sheets, No. 28, $3.10 per square, for 2½-in. corrugations. These prices are subject to a rebate of 5c. per 100 lb. to the large trade under the usual conditions, jobbers charging the usual advances for small lots from store.

Tin Plate.—Larger orders are being placed in both Bright and Roofing Plates, particularly the latter, than for some time, and the mills are entering more new business than at any time since the depression of last October started. It is stated that some large contracts were placed for Bright Plate by canning interests that attended the convention of the Can Association in Cincinnati last week. It has been estimated that the consumption of Tin Plate this year will hardly be as heavy as last year, particularly in Roofing Plates, owing to the general business depression, which has hung up a large amount of building work. We are advised that prices are being held, and the outlook for the Tin Plate trade is regarded as fairly satisfactory. We quote at $3.70 for 100 lb. Cokes, 14 x 20, f.o.b. Pittsburgh, terms 30 days, less 2 per cent. off for cash in 10 days, this price being subject to the usual rebate of 5c. per base box in large lots.

Bars.—The recent action of the Eastern and Western makers of Iron Bars in advancing prices is expected to remove the demoralization that has existed in prices of Iron Bars for the past three or four weeks. The previous reduction in prices of Iron Bars was regarded by the trade as a serious mistake, and the putting up of the price again indicates that the mills have come to the same conclusion. New business in both Iron and Steel Bars is only fair, but is much better than in December, and larger than in the early part of January. The Republic Iron & Steel Company, the leading Western maker of Iron Bars, and also a large producer of Steel Bars, is running its Bar mills to between 40 and 50 per cent. of capacity. We quote Iron Bars at 1.50c. for the Pittsburgh District, and 1.47c., Pittsburgh, for Chicago and points further West. Steel Bars remain very firm, at 1.60c., Pittsburgh.

Spelter.—The market is somewhat erratic and there is a wide range in quotations. Some sellers are naming as low as 4.40c., St. Louis, while others ask 4.50c. and 4.55c., St. Louis, to which a freight rate of 12½c., Pittsburgh, should be added.

Hoops and Bands.—Practically no orders are being placed, consumers having covered their requirements practically a year ahead, very shortly after the mills reaffirmed prices. Specifications against these contracts are coming in at a fairly satisfactory rate. We quote Steel Hoops at $2, base, full Hoop card extras; Steel Bands, $1.60, base, half Steel card extras, all f.o.b. cars, Pittsburgh, Pa., in carload lots, for delivery during 1908.

Spikes.—Very little new business is being placed, but it is said that two or three of the railroads will soon be in the market with inquiries for a large tonnage. We quote Standard sizes of Steel Railroad Spikes at $1.80 to $1.85, but in some cases a lower price has been named in competition with Iron Spikes. The smaller sizes are held at $1.95 to $2 per 100 lb., f.o.b. Pittsburgh.

Merchant Steel.—This trade continues very quiet. New orders being placed are only for small lots and actual needs. Prices are being shaded to some extent, especially in Shafting, which is being offered as low as 55 and 2½ per cent. off in large lots, the regular discount being 54 per cent. off. Implement makers are buying sparingly, believing that prices will be lower. We quote nominally: Smooth Finished Machinery Steel, 1.85c. to 2c., depending on quality; Flat Sleigh Shoe, 1.65c. to 1.75c.; Cutter Shoe, 2.15c. to 2.20c.; Toe Calk Steel, 2.10c. to 2.15c.; Railroad Spring Steel, 1.75c. to 1.80c.; Crucible Tool Steel, 6c. to 8c. for ordinary grades, and 10c. and upward for special grades.

Merchant Pipe.—Some of the oil and gas companies are in the market for a fairly large tonnage of Pipe, but are offering extended terms of payment, mostly by notes, and for this reason it is uncertain whether this business will actually develop. The Youngstown Sheet & Tube Company has taken in the past month three or four contracts for genuine Iron Pipe for shipment to the Panama Canal, and calling for 500 to 1000 tons each. The mills have guaranteed prices on both Iron and Steel Pipe against decline to April 1, and this has resulted in the large trade placing orders more freely. Leading Pipe mills are now operating to 50 and 60 per cent. of capacity, this being much larger than in December and January. The Youngstown Sheet & Tube Company has issued a new card on both Iron and Steel Pipe, prices on Iron Pipe being in all cases two points higher than on Steel Pipe. Net discounts on Steel Pipe to the large trade on ⅜ to 6 in. remain at 74 and 5 per cent. off list, while on Iron Pipe, the absolute minimum is 72 and 5 per cent. Discounts on Steel Pipe are as follows:

Merchant Pipe.

	Jobbers, carloads. Steel. Black.	Galv.
	%	%
⅛ to ¼ in.	65	49
⅜ in.	67	53
½ in.	69	57
¾ to 6 in.	73	63
7 to 12 in.	70	55
Extra strong, plain ends:		
¼ to ⅜ in.	58	46
½ to 4 in.	65	53
4½ to 8 in.	61	49
Double extra strong, plain ends:		
½ to 8 in.	54	43

The new discounts on Genuine Iron Pipe are as follows:

	Black.	Galv.
⅛ and ¼ in.	63	..
⅜ in.	65	51
½ in.	67	55
¾ to 6 in.	71	61
7 to 12 in.	68	53
Extra strong, plain ends:		
⅛ to ⅜ in.	56	44
½ to 4 in.	63	51
4½ to 8 in.	59	47
Double extra strong, plain ends:		
½ to 8 in.	52	41

Boiler Tubes.—There is a little more activity in Locomotive Tubes, but buying is mostly in small lots for actual needs, and this also applies to Merchant Tubes. Prices continue to be shaded more or less, even on the small amount of new business that is being placed. Discounts on Mer-

chant Tubes for small lots, on which an extra 5 per cent. is allowed in carloads, are as follows:

Boiler Tubes.

	Iron.	Steel.
1 to 1½ in.	42	47
1¾ to 2¼ in.	42	59
2½ in.	47	61
2¾ to 5 in.	52	65
6 to 13 in.	42	59

2½ in. and smaller, over 18 ft. long, 10 per cent. net extra.
2¾ in. and larger, over 22 ft. long, 10 per cent. net extra.

Iron and Steel Scrap.—The Pennsylvania Railroad sold last week a fairly large tonnage of Scrap, on which the average prices obtained were somewhat higher than on its January sale. Included in the sales were 1500 tons of Heavy Steel Scrap, for which dealers paid $13.75 to $14, and about the same tonnage of Rerolling Rails which brought the same prices. The Scrap trade is referred to by dealers as being in better condition now, as regards demand, than at any time since the slump started, last October. We note that prices on all kinds of Scrap are firm, dealers quoting about as follows: Heavy Steel Scrap, for Pittsburgh, Steubenville or Sharon delivery, $14; No. 1 Cast Scrap, $15.25 to $15.50; Low Phosphorus Melting Stock, $17.50 to $18; Bundled Sheet Scrap, $9.50 to $10; No. 1 Busheling Scrap, $14 to $14.50; No. 2, $12 to $12.50; Cast Iron Borings, $8 to $8.50; Steel Axles, $16; Iron Axles, $20.50 to $21; Rerolling Rails, $14 to $14.50; Old Steel Rails, short pieces for Open Hearth use, $14; Standard Sheet Bar Crop Ends, $15 to $15.50, and Grate Bars, $13 to $13.50. All above prices are per gross ton, f.o.b. Pittsburgh:

Coke.—There is a fair amount of inquiry for Furnace Coke. It is believed that prices have about reached the bottom, and will show improvement from this time forward. We quote strictly Connellsville Furnace Coke for spot delivery at $1.90 to $1.95, while other grades are offered at $1.75 to $1.85, at oven. Strictly Connellsville 72-hr. Foundry Coke continues to be held at $2.40 to $2.45, at oven, while other grades are offered as low as $2.25, at oven. The output of Coke continue to increase, the Upper and Lower Connellsville regions having made last week 215,560 tons, an increase over the previous week of nearly 7000 tons.

Cleveland.

CLEVELAND, OHIO, February 10, 1908.

Iron Ore.—Last year's Ore prices were informally reaffirmed for this season at a meeting held at the Hollenden Hotel last Friday, attended by representatives of the leading Merchant Ore firms of this city. President William E. Corey of the United States Steel Corporation attended the meeting. While some of the shippers have thought it useless to take any definite action regarding Ore prices at the present time, they felt disposed to comply with the wishes of a large share of the furnace interests that action in maintaining prices be taken without further delay. Conditions were discussed at some length, and the general feeling was that it would be better to maintain last season's prices. Some shippers say that they would rather leave the Ore in the ground than sell it at lower prices, and the fact that wages on the Iron ranges are higher than ever before, and have not been reduced during the present winter, making the cost of production greater, was used as an argument in maintaining prices. While all the shippers were not represented at the meeting, the largest were, and the decision is regarded as final, as far as it relates to the principal producers. Some Ore for 1908 delivery may be sold at prices lower than those that prevailed last season, but the amount will probably be small. The reaffirming of last season's prices is not expected to have any effect on the market. It is not believed that there will any buying movement of importance before April. Some of the shippers have already notified their customers that all the Ore they will sell this season will be at last season's prices. In view of the large falling off that is expected in shipments during the coming season practically all the shippers have greatly reduced the winter output of their mines. Shipping orders from the docks as yet show no improvement. We quote Ore prices, as follows, at Lake Erie docks for 1908 delivery, per gross ton: Old Range Bessemer, $5; Mesaba Bessemer, $4.75; Old Range non-Bessemer, $4.25; Mesaba non-Bessemer, $4; Siliceous Bessemer, $2.75; Siliceous non-Bessemer, $2.35 to $2.60.

Pig Iron.—As the outcome of a meeting of the blast furnace interests engaged in the manufacture of Foundry Pig Iron in the Middle West, held at the Union Club in this city last Saturday, a new agreement fixing the price of Northern Foundry Iron will be announced in two or three days. The meeting is said to have been more largely attended than any similar meeting of Foundry Iron producers in this territory. There were between 50 and 60 men present, representing furnaces in the Valleys, Pittsburgh, Buffalo, Cincinnati, Chicago and Milwaukee districts. With two exceptions all the furnaces in the territory were represented, and it is believed that the two not represented will adopt prices to conform to the agreement. The session lasted all day. The general sentiment of the meeting was that Iron had been sold below the cost of production and that steps should be taken to insure a fair profit for the producers and maintain more stable prices. The melt is believed to be considerably larger than a few weeks ago, and the feeling was expressed that there will be a gradual improvement from now on. The recent agreement fixing $17, Valley furnace, as the basis for No. 2 Foundry Iron, which fell to pieces in a few days, was discussed at some length, and some unsatisfactory features in that agreement, which caused it to fail, were pointed out. The matter of preparing a new agreement was left to a committee of seven, of which Frank B. Richards of Cleveland is chairman. The committee has prepared a report and the prices named will go into effect, probably the latter part of the week, as soon as the furnace interests receive the report. It is understood that the agreement is similar, with certain modifications, to the one recently adopted, fixing $17, Valley furnace, as the price for No. 2 Foundry Iron. Modifications have been adopted to suit the interests that objected to the former agreement. Until the new agreement goes into effect, on its receipt by the furnace interests, the price of $17, Valley furnace, for No. 2 Iron will prevail. The market has been quiet, and no sales are reported except a few small lots. Some fairly good inquiries have developed, however. There is one inquiry from a local consumer for 500 tons of Foundry Iron, and another for 500 to 1000 tons of Foundry Iron from an implement maker for spot shipment to an Eastern plant. For the first quarter and first half we quote, delivered, Cleveland:

Bessemer	$17.90 to $18.90
Northern Foundry, No. 1	17.85 to 18.35
Northern Foundry, No. 2	17.35 to 18.35
Northern Foundry, No. 3	16.85 to 17.35
Southern Foundry, No. 2	17.35 to 18.35
Gray Forge	16.90

Coke.—The market is very quiet, and inquiries are scarce. Prices remain about stationary. We quote the best grades of Connellsville Furnace Coke at $1.85 to $2, at oven, for spot shipment. We quote 72-hr. Foundry Coke at $2.50 to $2.60, at oven.

Old Material.—A little more activity is noted, this being mainly due to the fact that some mills are asking for deliveries on Scrap bought late last year. To fill these orders dealers are buying of each other, paying slightly better prices than the mills would be willing to pay if they were placing new orders now. Borings are in fairly good demand, there being some inquiry from Pittsburgh dealers, who are offering about $7.50 per gross ton, f.o.b. Cleveland. Local mills are buying very little Scrap, and that for immediate needs. Although the market has not improved much the general feeling is better. Quotations are still largely nominal. Dealers' prices to the trade, per gross ton, f.o.b. Cleveland, are as follows:

Old Steel Rails	$11.50 to $12.00
Old Iron Rails	16.00 to 17.00
Steel Car Axles	17.00 to 18.00
Old Car Wheels	16.00 to 17.00
Relaying Rails, 50 lb. and over	25.50 to 26.00
Relaying Rails, under 50 lb.	28.00 to 29.00
Heavy Melting Steel	12.00 to 12.50
Railroad Malleable	12.00 to 13.00
Agricultural Malleable	11.00 to 12.00
Light Bundled Sheet Scrap	8.00 to 9.00

The following quotations are per net ton, f.o.b. Cleveland:

Iron Car Axles	$16.00 to $16.50
Cast Borings	5.00 to 6.00
Iron and Steel Turnings and Drillings	7.00 to 8.00
Steel Axle Turnings	7.50 to 8.00
No. 1 Busheling	11.00 to 12.00
No. 1 Railroad Wrought	11.00 to 12.00
No. 1 Cast	12.00 to 13.00
Stove Plate	10.50 to 11.00
Bundled Tin Scrap	9.00

Finished Iron and Steel.—The market shows some improvement as the result of the gradual betterment in general conditions and the action of leading producers in deciding to maintain prices. While current orders are not much better, specifications have been coming in in very satisfactory shape during the week, mostly for Bars, Shapes, and Plates. In Structural Material there are a number of inquiries for lots ranging from 50 to 100 tons. Some new orders are being placed for Iron Bars, and both of the local Bar mills are running this week. There is some demand for Forging Billets in small lots, which are being sold on the basis of $30, Pittsburgh. During the week the Great Lakes Engineering Company placed orders for three Steel Drill Scows, each of which will take about 150 tons, mostly Structural. The boats were projected some time ago, but the award of the contracts was held up for several months. The Steel for two of the boats will be furnished by the Republic Construction Company, Cleveland. The Interstate Engineering Company, Cleveland, has the other contract. Local jobbers have decided to make no advance in the store price of Bar Iron, their price remaining the same as before the recent $2 per ton advance. To move more quickly large stocks of Steel Bars local jobbers have reduced the store price from 1.90c. and 1.95c. to 1.85c. On mill orders we quote Iron Bars at 1.60c., Cleveland; Steel Bars, 1.70c., Cleveland, for carload lots, half extras; Beams and Channels, 1.80c., base,

Cleveland, and Plates, ¼-in. and heavier, 1.80c., base, Cleveland. We quote Sheets, mill shipments, carload lots, Cleveland, as follows: Blue Annealed, No. 10, 1.90c.; Box Annealed, No. 28, 2.60c.; Galvanized, No. 28, 3.65c. We quote Steel Bars out of stock at 1.85c., and Iron Bars at 1.80c. Beams and Channels out of stock are 2.10c. to 2.15c., base. Warehouse prices on Sheets are as follows: Blue Annealed, No. 10, 2.20c.; Box Annealed, No. 28, 2.90c.; Galvanized, No. 28, 4.05c. Warehouse prices on Boiler Tubes, 2¾ to 5 in., are 64 per cent. discount, and on Black Merchant Iron Pipe, base sizes, 67 per cent. discount.

Cincinnati.

CINCINNATI, OHIO, February 11, 1908.—(*By Telegraph.*)

Awaiting developments best expresses the situation in a general market way in this territory to-day. There is no apparent improvement in the situation with respect to finished products save, perhaps, that manufacturers of electrical equipment are feeling less than the rest the stagnation, and there is some demand for Structural Material. In other lines the inquiries and acts of the consumer give the impression that he is not going to invest save at a speculative figure, and the figures of the buyer and the seller are still quite far apart. Such buying as is going is of small tonnage, for immediate shipment, and there is practically no disposition shown to contract for forward delivery. Machine tool manufacturers seem to be holding firmly to established prices, and all plants are being operated on an economical basis. The foundry melt is still very much off, probably not more than one-third of what may be termed normal. There are rumors flying about involving furnaces in both Northern and Southern districts, and the break in the stock market of to-day adds its quota of interest to those predicting breaks in Pig Iron prices. The feeling here is that the New York and Cleveland meetings have done much to steady a very critical and unstable condition, and the rumor of pending breaks in prevailing prices is not accepted with any degree of credibility by the rank and file of the trade, considering the restricted production in both crude and finished lines, and the sold up condition of most of the large interests.

Pig Iron.—In the absence of transactions, and delving about to discover the reason for loss of several late contracts of good size, some selling agencies are turning up what appears to be evidence of price slaughter. However true this may be, certain it is that the market to-day presents more complexities than for a long time. In the face of six positive statements that the price of standard brands of Southern No. 2 is fixed unalterably at $13.50, there is good reason for the statement that $13 is being done, and it is asserted that this price has been and is being shaded. A leading Southern interest which has less than one-third of its furnaces in blast and some 50,000 or 60,000 tons of Iron on its yards is credited with having made a break in prices within the past few days. It now announces that every pound of Iron in its yards is all sold up either on contract or provided for otherwise. Another Southern interest, which has been credited with shading prices and does not, nor has ever, joined any combination, states through its local representative that no Iron has been sold by it at less than $13, Birmingham, for three weeks. A local office was interested in the sale of about 5000 tons of Malleable to a Pittsburgh concern for May delivery at about $16, Valley furnace. A sale expected to be placed to-day is a lot of 700 tons, graded in Nos. 1, 2 and 3 Foundry, for shipment one-third prompt, one-third in July, and one-third in November, to be used by a Michigan manufacturer of implements. A Michigan manufacturer of automobiles is out with an inquiry for No. 2 Foundry, but announces that the purchase will not be closed for 30 days. Reluctance to quote for last half requirements is as marked as a week ago, but sellers agree as a rule that a basis of $13.50, Birmingham, for Southern No. 2, and $17, Hanging Rock furnace, for Northern No. 2, would be acceptable to furnace interests in both districts. Local foundry interests are not buying. A leading Ohio stove interest is out with an inquiry for 100 tons of No. 2 Foundry for prompt shipment. There has been some movement in Silicon Irons, and $20 for 8 per cent. is said to have been shaded somewhat. For immediate delivery and for balance of first half we quote, f.o.b. Cincinnati, as follows, the freight rates being $3.25, $1.80 and $1.20, from the Birmingham, Valley and Hanging Rock districts, respectively:

Southern Coke, No. 1	$16.25 to $16.75
Southern Coke, No. 2	15.75 to 16.25
Southern Coke, No. 3	15.25 to 15.75
Southern Coke, No. 4	14.75 to 15.25
Southern Coke, No. 1 Soft	16.25 to 16.75
Southern Coke, No. 2 Soft	15.75 to 16.25
Southern Coke, Gray Forge	14.25 to 14.75
Southern Coke, Mottled	13.75 to 14.25
Ohio Silvery, 8 per cent. Silicon	21.20 to 21.70
Lake Superior Coke, No. 1	17.70 to 18.20
Lake Superior Coke, No. 2	17.20 to 17.70
Lake Superior Coke, No. 3	16.70 to 17.20
Standard Southern Car Wheel	25.25 to 25.75
Lake Superior Car Wheel	23.50 to 24.00

(*By Mail.*)

Coke.—There is a steady sale of Coke, mostly, however, in small lots, and largely of better Foundry grades. Some contracting is being done, and for standard grades the price covering the three-quarters is about $2.50, at oven. The range on Connellsville Foundry is a trifle broader and is quotable at from $2.25 to $2.75, at oven; Furnace, $1.75 to $2, although the top price is said to have been shaded to about $1.90. Various standard makes of Virginia Cokes are selling at $2.50 to $2.75, at oven, for Foundry and $2.30 to $2.40 for Furnace. Other grades of Foundry are selling at $2.25 to $2.50 and Furnace at about $1.75.

Finished Iron and Steel.—As one of the principal store interests remarks, "the trade is sitting back and waiting." Buying is still for actual requirements, and there is nothing of consequence moving save perhaps some fairly good sized tonnages of Structural Material. There is no change in prices, and the best posted dealers express the belief that no reductions may be looked for; on the contrary, that there may be a little stiffening in prices ere long as a result of the New York and Cleveland meetings. Dealers quote, f.o.b. Cincinnati, as follows: Iron Bars, carload lots, 1.55c., with half extras; small lots from store, 1.90c., base, one-half extras; Steel Bars, carload lots, 1.75c., base, half extras; small lots from store, 1.90c., base, half extras. Base Angles, carload lots, 1.85c., base; small lots from store, 2.10c. Beams, Channels and Structural Angles, 1.85c., base; small lots from store, 2.10c. Plates, ¼ in. and heavier, carload lots, 1.85c.; small lots from store, 2.10c. Blue Annealed Sheets (heavy), No. 16, carload lots, 2.15c.; small lots from store, 2.50c. No. 14, carload lots, 2.05c.; small lots from store, 2.40c. No. 10 and heavier, carload lots, 1.95c.; small lots from store, 2.25c. No. 12, carload lots, 2c.; small lots from store, 2.35c. Sheets (light), Black No. 28, carload lots, 2.65c.; Galvanized Sheets, No. 28, carload lots, 3.70c. Steel Tire, 4-in. or heavier, carload lots, 1.95c., base. Plates, 3-16 and No. 8, carload lots, 2c.; small lots from store, 2.25c.

Old Material.—Local Scrap dealers may be denominated as "bullish." While there is scarcely any discernible improvement in inquiry and demand over last week, those who have been heavy buyers of Scrap during the four or five months of depression believe the tedium of the long wait is about broken, and that a comparatively early resumption of business is indicated. There are some very good inquiries on hand from foreign trade. The promised starting soon of some new Steel mills is accepted as an encouraging sign. The following prices are quoted as fairly representative of the market to-day and are f.o.b. Cincinnati:

No. 1 Railroad Wrought, net ton	$11.00 to $12.00
Cast Borings, net ton	4.00 to 5.00
Steel Turnings, net ton	5.00 to 6.00
No. 1 Cast Scrap, net ton	12.00 to 13.00
Burnt Cast and Wrought, net ton	7.00 to 8.00
Old Iron Axles, net ton	14.50 to 15.50
Old Iron Rails, gross ton	14.50 to 15.50
Old Steel Rails, long, gross ton	11.50 to 12.50
Relaying Rails, 56 lb. and up, gross ton	22.00 to 23.00
Old Car Wheels, gross ton	16.00 to 17.00
Low Phosphorus Scrap, gross ton	13.50 to 14.50

Birmingham.

BIRMINGHAM, ALA., February 8, 1908.

Pig Iron.—Notwithstanding the fact that buyers manifest a disposition to enter the market only for actual requirements, the aggregate of sales for the week is indicative of a steady increase in the demand. Recent sales have been confined to lots ranging from 100 to 500 tons, for prompt shipment; consequently it cannot be definitely stated just what price coould be had on a round tonnage for advanced delivery, but the quotation of $13.50, f.o.b. Birmingham, is being adhered to, and sales reported indicate the maintenance of such a basis. An offer for 1000 tons at $13 per ton is known to have recently been refused. The inquiry from a Michigan concern, previously reported, for upward of 5000 tons, has not resulted in a sale, and it is understood that quotations were made on a basis of $13.50, Birmingham delivery; however, the analysis specified was such that the order could be filled by probably only one concern in the district. Some bargain Iron is being offered, principally off grades, and a lot of something like 400 tons has sold at figures around $13, but the tonnage offered is limited and prices received cannot be considered a criterion of market prices. The result of recent meetings at New York and Cleveland has been awaited with much interest by both producers and consumers and a marked improvement in trade conditions is indicated; yet there is evidence that purchasers will be disposed to pursue a conservative policy as to negotiations until the improvement in general conditions is more material, and increased proportions of tonnage engaged are expected to be slow to develop. Products are apparently satisfied with the present output as compared with the nature of the demand, and it is believed that production is now closely adjusted to order book requirements. It is to be noted that only 11 merchant furnaces in the entire district

are in operation, and an increase in the number is not expected before March 1, at least.

Cast Iron Pipe.—Specifications to cover approximately 8000 tons of Water Pipe for the city of New Britain, Conn., have been submitted, and bids will be opened February 11. It is also reported that some thing like 4000 tons of 42-in. Pipe is soon to be placed for Cuban points, as well as some lots for points along the Pacific Coast and Mexico. The United States Cast Iron Pipe & Foundry Company is reported as being the successful bidder on 4000 tons for Indianapolis, Ind., but the price received cannot be ascertained. Order books of local producers are now in good shape, and in one instance quotations on forward deliveries are being made with some reluctance. Nominal quotations on Water Pipe are as follows, per net ton, f.o.b. cars here: 4 to 6 in., $28; 8 to 12 in., $26; over 12-in. average, $25, with $1 per ton extra for Gas Pipe.

Old Material.—The aggregate of sales for the week is considerably in excess of that reported for some weeks previous, and a more cheerful tone in the market is apparent. Sales have been very much on the hand-to-mouth order, and prices received have been at variance; but, taken as a whole, there is a slight improvement in conditions and dealers are encouraged. We revise nominal quotations as follows, per gross ton, f.o.b. cars here:

Old Iron Rails	$18.00 to $18.50
Old Iron Axles	16.50 to 17.00
Old Steel Axles	15.50 to 16.00
Old Car Wheels	18.50 to 19.00
No. 1 Railroad Wrought	13.50 to 14.00
No. 2 Railroad Wrought	10.50 to 11.00
No. 1 Country Wrought	12.50 to 13.00
No. 2 Country Wrought	10.50 to 11.00
Wrought Pipe and Flues	10.50 to 11.00
Railroad Malleable	12.50 to 13.00
No. 1 Steel	13.00 to 13.50
No. 1 Machinery Cast	10.50 to 11.00
Stove Plate and Light Cast	9.50 to 10.00
Cast Borings	6.00 to 6.50

The Coal Trade.

BY FREDERICK E. SAWARD, NEW YORK.

There has recently been a much better tone to the trade. The severe weather of February has helped along to that end, for numerous steam generating plants have been run at full pressure, and the general trend of manufacturing establishments is toward the greater use of fuel—greater than was the situation three weeks ago. The railroads are carrying more fuel than they did in January; that was the ebb, so far as Coal trade conditions are concerned, within recent times. It is one of the notable features that in January the Pennsylvania Railroad carried only about three-quarters of the tonnage that it moved in the same month last year.

Another interesting trade feature is the greater demand for the slack of the Bituminous mines, which is now quoted in some instances as high as 75c. a ton at the mines, even on yearly contracts. This development and the heavy demand for the smaller sizes of Anthracite, generally known as the steam sizes, show that there is a better use of Coals for these purposes, as stated above. It is known that many of the Soft Coal mines are not running over four days a week, and this helps the situation from the producers' point of view. Anthracite has been doing a full business, for the January returns show 5,618,339 tons shipped, which is much ahead of last year, while the average January shipment for five years previous was 5,043,160 tons, which should mean a full supply of all the various sizes.

The Bituminous Coal trade has had some relief owing to the clearing up of accumulated stocks at tidewater. The curtailment of production which the large operators have enforced is directly responsible for the consumption of a great portion of the stock on hand. When the market becomes active again, the central Pennsylvania operators will be able to supply plenty of Coal by reason of the fact that they have much Soft Coal at the mines waiting for shipment, and they will be able to secure ample facilities for bringing their production to tidewater points. The bargain counter prices, however, have about disappeared.

At tidewater Pea Coal is still reported short, but the demand is not so great for this as it was, and a surplus of it would not surprise any one. Buckwheat has fallen, and individual Coal that was held at $2.45 and upward a week ago is now down to $2.25 and not finding a ready market at that. Rice is also more easy, and prices have declined a little on this size. Barley is a drug, and practically no price induces business. At no time during the summer could this size be purchased at anywhere near the figures now prevailing on this size.

Soft Coal has continued to improve gradually. At present there is scarcely any cheap Coal on the docks. Considerable Coal was being forced for sale at sacrifice prices a week ago, and this moved it off quite rapidly. At South Amboy the number of cars standing average about 1200, but there is little or no Coal now being sacrificed. Shippers are only sending down what they can move on contracts, and there is, therefore, no amount of surplus Coal held on hand. The Port Reading situation is also in good shape. The surplus was cleaned up at this dock a week or more ago, and at this time prices are fairly good for shipment. At St. George there is still a little demurrage Coal to be moved, which is offered at $2.15, f.o.b. This should be cleaned out shortly, and the market will no doubt show a considerable improvement, in the way of price at least. New York prices on Soft Coal may be quoted as follows:

Georges Creek	$3.20 to $3.25
High grade, three-quarter lump	3.20 to 3.25
High grade gas, run of mine	3.00 to 3.10
Best Miller vein coals	2.75 to 2.90
Good Miller and Moshannon	2.60 to 2.65
Best Somerset	2.70 to 2.80
Ordinary Somerset	2.65 to 2.70
Fairmont three-quarter	2.85 to 2.90
Fairmont, run of mine	2.80 to 2.85
Odds and ends to relieve embargoes, &c.	2.30 to 2.50

Line Bituminous rates are as follows:

Pennsylvania Railroad Coals.

Georges Creek	$2.00 to $2.25
Best Miller vein	1.40 to 1.60
Good Miller and Moshannon	1.15 to 1.20
Best gas coal, three-quarter lump	1.30 to 1.40
Best gas coal, run of mine	1.20 to 1.30
Best gas coal, slack	.45 to .65
Ordinary Clearfield	1.10 to 1.15
Ordinary Latrobe	1.00 to 1.10

Baltimore & Ohio Coals.

Georges Creek	$2.00 to $2.25
Best Somerset	1.25 to 1.30
Somerset	1.10 to 1.15
West Virginia Freeport	1.00 to 1.05
Fairmont District, three-quarter lump	1.00 to 1.10
Fairmont District, run of mine	.90 to 1.00
Fairmont District, slack	.45 to .50

At least some portion of the Anthracite trade is discussing new Coal year topics. The question whether there shall be the usual reduction of 50c. per ton at the beginning of the Coal year is the most important. In the West the opinion is strong among the dealers, and it has been rather openly expressed in the last two weeks, that there should be no reduction in price on April 1. Certain representatives of the largest and the smallest shipping companies have favored a reduction, but the others have thought it unwise to change the course which has been followed for so many years.

Metal Market.

NEW YORK, February 11, 1908.

Pig Tin.—The shortage in Tin is becoming more and more acute, and sharp premiums are demanded and paid for spot stocks. On Monday, in spite of a drop of £2 since Friday in London, the market advanced 30 to 35 points here. On Thursday and Friday of last week there was an active business, and on Saturday a few transactions were effected, which is unusual. Buying seems to be coming from both can makers and Tin Plate manufacturers. The following is the range of prices for the past week:

	Cents.
February 5	28.50
February 6	28.85
February 7	28.80
February 9	29.00
February 10	29.10 to 29.15
February 11	29.50 to 29.60

Arrivals since the first of the month have been small, amounting to but 405 tons. There are afloat for American ports 2000 tons, and the only important vessel coming in the near future is the Massachusetts, which is due to arrive February 19, with 850 tons. This boat will, of course, materially relieve the situation, but the question is what consumers are to do until Tin from this vessel is unloaded. There are two possible solutions, either Tin can be shipped by fast steamer from Southampton, or the leading consuming interest may see fit to put some of its stock in the market and so relieve the situation. This has been done in the past, but it seems unlikely that during a period of low prices, such as this, the same strenuous effort will be made to keep the market in due bounds as was made when Tin was selling 10c. to 15c. per lb. higher. Inquiries were in the market on Monday for more Tin than could be supplied at the price. The low price of the week in London was made February 10, Tin closing at £127 15s. for spot and £128 for futures. The London market closed firm to-day at £129 10s. for spot and £129 5s. for futures, with sales of 400 tons spot and 1000 tons futures.

Copper.—A gradual declining tendency is noted, but business is so dull that it is almost impossible to secure any confirmation of prices. In a general way Lake can be had at 13.37½c. to 13.62½c.; Electrolytic at 13.25½c. to 13.50c., and Casting at 13.12½c. to 13.37½c. These prices, however, are not being quoted by producers, but there is so much resale Copper in the market that it is believed consumers can secure metal at these figures. At times like these the market is extremely sensitive to disquieting rumors, and two at least have appeared this week, one being of a sale of fair tonnage at concessions but within the quoted range, and another that an important producing interest has given orders to meet the market. Whether these are true or not remains to be seen, but they have undoubtedly had some effect on sentiment. Domestic consumers are buying practically nothing, and foreign buyers are likewise looking for

lower prices. A further decline in the London market took place on Monday, prices going down to £59 7s. 6d. for spot and £59 15s. for futures. Since then, however, they have recovered slightly and close to-day at £59 10s. spot and £59 17s. 6d. futures, with spot sales 400 tons and futures 1000 tons. Exports are small, amounting to but 5122 tons since February 1. L. Vogelstein & Co., American agents for Aron Hirsch & Son, Halberstadt, Germany, figure the German consumption of Copper during the year 1907 at 119,552 tons, being a decrease of but 3 tons as compared with the year 1906. Of this consumption 103,630 tons were imported from the United States.

Pig Lead.—The market is quiet and dull, but continues firm, and Lead can be had in New York at 3.75c. The same price, however, has been paid in St. Louis for good brands, and there is nothing offered there under 3.75c. This means that the New York and St. Louis markets are on the same basis.

Spelter.—Prices advanced somewhat sharply on Saturday, and it looked as though a boom was on, 4.90c. being paid for spot Spelter in New York and 4.75c. in St. Louis. The principal reason for this sharp advance was the withdrawal of prices by one of the leading producers, coupled with the rumor that it would hereafter base its prices on those prevailing for Ore, which would be equal to 5.15c., New York. Of course, no Spelter can be sold at the present time at that level, but better business is hoped for.

Antimony.—The market continues dull and unchanged, Cookson's being held at 9.50c., Hallett's at 9c., and Hungarian brands at 8.50c.

Nickel.—Prices are without change, at 45c. for large lots and 55c. to 60c. for smaller quantities.

Tin Plates.—Some improvement in the domestic demand for Tin Plates is noted. The encouragement given to the Tin Plate trade by an advance of 1½d. in Swansea last week on Welsh Tin Plates continues. The advance now amounts to nearly a shilling on Oil Plates, and there has been a very good business transacted. Welsh Tin Plate makers are considerably more optimistic regarding the outlook. Domestic prices continue unchanged, at $3.89, f.o.b. New York, for 100-lb. IC Coke Plates, and $3.70, f.o.b. Pittsburgh.

Ferroalloys.—The resale lots which have been hanging over the market, which were offered by some of the large electrical consumers, have apparently disappeared, and prices are on a more stable basis, although practically unchanged from a week ago. For 50 per cent. Ferrosilicon $85 is asked and paid. There is an inquiry in the market this week from the Carnegie Steel Company, which has been the first important Steel inquiry for some time. Unchanged prices continue to be quoted on Ferromanganese—$47.50 to $48.50.

Old Metals.—The continued decline in the price of Ingot Copper has had no effect on the price of Old Metals. It has been frequently pointed out that in times of a low market like these manufacturing concerns which accumulate Scrap prefer to keep their supplies until better prices can be realized, consequently there is little coming on the market. On the other hand, some concerns are running so close that they prefer to buy Scrap Metal, if only at a slight concession from Ingot Copper. Shipments abroad continue to have a stimulating effect on the market. Stocks in dealers' hands continue low, and, as stated above, their selling prices are unchanged from last week, as follows:

	Cents.
Copper, Heavy Cut and Crucible	13.00 to 13.25
Copper, Heavy and Wire	12.50 to 13.00
Copper, Heavy and Bottoms	11.50 to 11.75
Brass, Heavy	10.00 to 10.25
Brass, Light	7.75 to 8.00
Heavy Machine Composition	12.00 to 12.50
Clean Brass Turnings	8.25 to 8.75
Composition Turnings	10.00 to 11.00
Lead, Heavy	3.50
Lead, Tea	3.25
Zinc Scrap	3.25

New York.

NEW YORK, February 11, 1908.

Pig Iron.—Foundry grades are inactive, and little has been done in Basic, makers of which are generally maintaining $17.25, f.o.b. eastern Pennsylvania mill. A Cast Iron Pipe company has taken some No. 4 and Forge Pig in the past week, one lot amounting to 3000 tons. The maintenance of prices appears to be general, and Eastern producers are restricting their output to the extent of avoiding any increase in stocks. We continue quotations at tidewater as follows: No. 1 Northern Foundry, $18.75 to $19; No. 2 Foundry, $17.75 to $18.25; No. 2 Plain, $17.25 to $17.50; Gray Forge, $16.75 to $17. On Southern Iron we quote $17.50 to $18 for No. 1 Foundry and $17 to $17.50 for No. 2 Foundry.

Steel Rails.—The Pennsylvania Railroad Company's order for 1908 placed in the past few days amounts to 55,000 tons, in addition to 30,000 tons carried over from last year, which the mills are now rolling. The Steel Corporation receives 27,500 tons, or half the order, the remainder going to the Pennsylvania and Cambria companies and the Lackawanna Steel Company. The Erie Railroad's order for 60,000 tons is about closed. The Carnegie Steel Company has booked 4000 tons for the Pittsburgh & Lake Erie, and an additional tonnage will be placed later. Two other lots, 1000 and 1500 tons, were also closed at Pittsburgh. The Panama Canal Commission is in the market for 2200 tons of 70-lb. Rails and 20,000 four-hole Angle Bars.

Structural Material.—Railroad bridge work has been rather more active of late, though the sharp competition for the relatively small tonnage coming out indicates that bidders are sacrificing profit to keep wheels turning. Most of the orders are for the West and Northwest. The Chicago Junction Railroad placed 1150 tons with the Wisconsin Bridge Company, and the St. Louis & San Francisco has contracted for 2200 tons. The Chicago & Northwestern's recent bridge orders amount to nearly 3000 tons, and the C. M. & St. P. closed for upward of 3000 tons. The Royal Insurance Company Building at San Francisco, 450 tons, has finally been closed, the contract going to the American Bridge Company. In New York City two school buildings, requiring about 1300 tons, are to be erected at once, and much other school work is waiting on the providing of funds. In New York City, according to the head of a large construction company, 150,000 workmen in the building trades are idle, and the same authority puts the number of such workers idle throughout the country at 700,000. On mill shipments the following prices prevail for tidewater deliveries: Beams, Channels, Angles and Zees, 1.86c.; Tees, 1.91c. On Beams, 18 to 24 in., and Angles over 6 in., the extra is 0.10c. Material cut to length is sold from stock at 2¼c. to 2½c.

Bars.—It is understood that considerable business was booked by the Iron Bar mills prior to the advance in price on February 5. Some orders have also been booked at the new price, as buyers have been somewhat impressed by the rapid change of front shown by the manufacturers. Eastern Bar mills are therefore more generally getting into operation, and those which have been running are assured of being able to continue for some little time. Iron Bars are quoted at 1.50c., Pittsburgh, or 1.60c., tidewater, and Steel Bars at 1.60c., Pittsburgh, or 1.76c., tidewater.

Plates.—Inquiries appear to show some improvement, but purchases are still indicative of a hand-to-mouth business. Prices are maintained as follows, at tidewater: Sheared Plates, 1.86c. to 1.96c.; Flange Plates, 1.96c. to 2.06c.; Marine Plates, 2.26c. to 2.36c.; Fire Box Plates, 2.75c. to 3.50c., according to specifications.

Cast Iron Pipe.—The past week has witnessed the closing of a considerably larger volume of business than any previous week for some months. Buyers are more generally in the market, and the volume of orders placed represents about the normal trade for this month. Bids on about 8000 tons of 24-in. for New Britain, Conn., will be opened to-day. Foundrymen are vigorously seeking business, and every order is the subject of sharp competition. Carload lots of 6-in. are available at $25 to $25.50, per net ton, at tidewater, although some makers name higher prices as their minimum.

Old Material.—The Foundry business is picking up to some extent. Cheap material in this line is not so plentiful, and prices consequently show a slight advance on Cast Scrap of all kinds. A few items in rolling mill material are in better demand as a result of the starting up of more of the Eastern Bar mills. A better demand is noted for Relaying Rails, and bargains are not so numerous as they have been. While the market looks better generally, yet it is observed that much of the demand for rolling mill stock and Steel Scrap comes from dealers who are filling orders taken some time ago. Not much demand has appeared directly from the mills and Steel works. The continuance of activity in the Scrap market will therefore depend on the ability of the large consumers to keep their works in operation. Conditions, however, are regarded as somewhat encouraging, and dealers are taking a more hopeful view of the future. Quotations, per gross ton, New York City, are as follows:

Old Girder and T Rails for melting	$8.50 to $9.50
Heavy Melting Steel Scrap	8.50 to 9.50
Old Steel Rails, rerolling lengths	10.00 to 11.00
Relaying Rails	17.50 to 18.50
Old Iron Rails	13.00 to 14.00
Standard Hammered Iron Car Axles	15.50 to 16.50
Old Steel Car Axles	13.00 to 14.00
No. 1 Railroad Wrought	11.00 to 12.00
Iron Track Scrap	9.00 to 10.00
No. 1 Yard Wrought, long	10.50 to 11.50
No. 1 Yard Wrought, short	9.50 to 10.00
Light Iron	4.50 to 5.50
Cast Borings	4.00 to 5.00
Wrought Turnings	5.50 to 6.50
Wrought Pipe	8.50 to 9.50
Old Car Wheels	17.00 to 18.00
No. 1 Heavy Cast, broken up	13.00 to 13.50
Stove Plate	11.50 to 12.00
Grate Bars	9.00 to 9.50
Locomotive Grate Bars	10.00 to 11.00
Malleable Cast	12.50 to 13.00

The American Railway Association's report February 6 showed 375,000 idle cars, against a shortage of 104,226 cars on February 6 last year.

The Basic Open Hearth Steel Process.*

BY ACHILLE BOSSER.

There is no old iron or steel which is not suitable for charging into the open hearth furnace, provided it is free from copper and from tin. The only materials which would introduce harmful elements are those applied to the surface of steel and iron; for instance, in tinning or coating with lead or zinc. The choice of the pig iron which is to constitute the other part of the charge depends not alone on the quality of the steel demanded by consumers, but also on a variety of economic considerations.

The Character of the Product Governs the Choice of the Pig Iron.

If it is the intention to produce high grade steel, and if the oxidation is not to be carried too far, recourse will be had to gray or mottled pig iron. The high percentage of silicon in the former will favor the refining process, and at the same time protect the iron against harmful oxidation. When it is the object to produce extra soft or hard steels which are subject to vigorous tests, then it will be usually advantageous to employ pure pig iron like Bessemer.

For the manufacture of ordinary mild steel, when the construction of the furnaces and their handling are adapted to the circumstances and assure a complete dephosphorization, it is advantageous to take phosphoric pig iron, since the difference in price between Bessemer and phosphoric iron favors the lattter. Thus the works which produce pig iron for the basic Bessemer generally utilize for their open hearth purposes basic Bessemer pig iron cast during stoppages or on Sundays, or grades of iron obtained from less expensive ores which contain from 0.15 to 0.80 per cent. of phosphorus; that is to say, iron too impure for the acid Bessemer and too low in phosphorus for the basic Bessemer process. Into pig iron of this character only that quantity of phosphorus is introduced which is brought by the ore without making any additions in the blast furnaces of phosphoric slags which ordinarily would be indispensable in order to produce pig iron for the basic Bessemer process. In order to utilize pig iron of this character with success it is evident that it is necessary to have oper. hearth furnaces which heat well, because the quantity of slag is large and is fused with difficulty.

The basic open hearth furnace permits of the use of pig iron of any phosphorus contents, provided that a sufficient quantity of lime is charged and provided that the operation is carried on until complete dephosphorization is attained. Generally, however, the phosphorus contents of the charge is made as low as possible. Any increase in the percentage of phosphorus brings with it the lengthening of the time for refining, increases the outlay for fuel and promotes the oxidation of the bath, which must afterward be counteracted by a larger addition of ferromanganese or of spiegel. Besides, large masses of cinder impair the quality of the steel. Therefore, as a matter of principle, open hearth charges are avoided which have a high percentage of phosphorus, and it is frequently advantageous not to go beyond 0.6 phosphorus.

The Ratio of Scrap to Pig Iron.

The ratio between the weight of the charge of pig iron and that of old material or scrap varies within very wide limits, depending above all upon the materials which the steel manager has at his disposal. It may happen, as the result of technical considerations and of local conditions, that the manager will find it advantageous to employ a charge carrying more pig iron and less scrap without, however, allowing the final product to contain more carbon, silicon or manganese. Thus the mixture may sometimes carry as much as 90 per cent. of scrap. This is the case with open hearth furnaces, which have been built as appendages to large Bessemer or basic Bessemer steel plants, and are intended to be used for the remelting of the scrap made. In the case of works having an abundance of pig iron the old materials constitute from one-half to three-quarters of the charge. Those works, on the contrary, that must buy pig iron in the open market should base their operations on the relative price of pig iron and old materials and fix the ratio with the aim of cutting down the length of the operation and securing minimum cost per ton of steel produced.

The charge should therefore be regulated in such a way that the operation involves the minimum of cost, both as to fuel and as to raw materials. With materials low in phosphorus, the weight of the pig iron which enters the charge has little influence from the point of view of the time required for the operation, because it is always possible to introduce oxidizing materials in proper quantities. Pure pig iron which carries silicon refines rapidly owing to the high temperature obtained by the combustion of the silicon and to the increase in the affinity of carbon to oxygen which a higher temperature brings about. It is not the same when pig iron high in phosphorus is treated. The operation, which in itself is prolonged, becomes still more extended when the percentage of pig iron in the charge is exaggerated and goes beyond that quantity needed to protect the metal against oxidation during the melting period. It will be seen, therefore, that the composition of a charge of a basic open hearth furnace varies within wide limits. [The author here cites a number of charges of several European works.]

Chemical Reactions.

The refining operation in the open hearth furnace consists essentially in the gradual elimination of the carbon, silicon, manganese and phosphorus, which is brought about by exposing the charge during several hours to the oxidizing action of the atmosphere and of the slag.

The oxidation of the different elements in the charge begins during the melting, so that the initial bath has a chemical composition very different from the average composition at the time of the charging of the materials. The melting goes on more rapidly the quicker the furnace is charged by mechanical methods and the better the furnace heats. The melting temperature of the different materials composing the charge is not the same. The higher they are in carbon the lower is the temperature required. Of the materials used, it is the pig iron which is first melted and which, trickling through the charge, undergoes the oxidizing action most. Its impurities are oxidized and protect the iron against too rapid oxidation, which would make a great part of it enter the slag.

The initial percentage of silicon in the charge should be moderate in the case of a basic lining. Silicon corrodes actively, the silica which is the result of its combustion attacking the hearth quickly. According to the quality of steel to be made, and in order to avoid as much as possible a rapid wear of the dolomite lining, it is desirable to approach as closely as possible a charge averaging 0.40 per cent. of silicon, with 0.80 as the maximum. The oxidation of silicon begins as soon as the pig iron melts, but it is partial only if the temperature of the furnace is high. It is carbon that then absorbs the greater part of the oxygen.

A low temperature, that is to say, slow melting, increases the oxidation of silicon, iron and manganese. The silica produced, being strongly acid, saturates the ferrous and manganous oxides formed in the bath before the lime additions have entered into the slag, so that silicates of iron and of manganese are formed. The latter pass into the slag. As the reactions develop the slag not only dissolves the lime additions, but there are formed, in the vicinity of the metallic charge which melts more rapidly, pockets containing liquid metal which dissolve the dolomitic lining, forming silicate of lime and of magnesia. The silica content of the slag, therefore, diminishes as the operation proceeds, while that of lime and of magnesia increases. As the result of these slags rich in bases, the affinity of silicon for oxygen is notably increased, and it is found that after the bath has been decarburated only traces of silicon remain in the bath. The addition of ore also contributes toward oxidizing the silicon contained in the charge, while the final addition of ferromanganese or of spiegel may finally reduce the silica

* From the *Revue Universelle des Mines et de Métallurgie*, July, 1907.

in the slag and increase the percentage of silicon in the metallic bath.

Manganese.

Since the product of the oxidation of the manganese contained in the metallic charge is a powerful base, which is formed in the presence of acid slag, there is produced an antagonistic action, and the formation of manganous oxide may be sufficiently interfered with to force the manganese to remain in the bath. While in the acid furnace the elimination of manganese excited by the presence of acid slag is very active, the basic lining, on the contrary, favors its retention, even under the influence of an oxidizing atmosphere or of additions of oxidizing materials, like ore or scale. The high temperature at which the open hearth operation is carried out favors the affinity of carbon for oxygen, forcing it to secure all oxidizing effects and to protect the manganese as long as the bath contains carbon. A part of the manganous oxide, which does not find any silica for its saturation, and which is formed at the expense of oxide of iron, is reduced by the carbon, the manganese re-entering the bath. The manganese, therefore, is an ozidizing agent in the bath, and the facility with which its oxides are reduced assures to it an important part in the refining of the metal.

When there is present a notable percentage of manganese in the initial charge it is not a rare occurrence to find 0.25 per cent. and even more in the metal when the carbon has been reduced below 0.1 per cent. It remains in the metal until the end of the refining process, and even after the dephosphorization. The presence of manganese in the charge is useful from several points of view. It protects the iron against oxidation, and, therefore, prevents the metal from absorbing protoxide of iron or from becoming hot short. If this element did not exist in the charge, or was in it only in a small percentage, so that the oxidization of iron would not be limited, then there would be the danger that the metal would be overoxidized. It would then become necessary to carry it back to its normal composition by large additions of iron high in silicon, carbon and manganese to the detriment of the quality of the metal, and at the expense of delaying the operation.

Manganese possesses valuable properties. It furnishes a fluid slag, and a slag containing manganese favors desulphurization. Although the presence of manganese in the charge is indispensable, and has an important action on the oxidation and desulphurization of the metal, it would be, nevertheless, disadvantageous to have an excess, since its effect is to slow down the heat. The best plan is to try to secure a charge carrying from 0.85 to 1.4 per cent. of manganese, the percentage being dependent upon the quality of the steel required and the method of charging. By charging mechanically the melting is accelerated, carbon burning rapidly, as compared with the silicon and manganese, so that the original percentage of the latter in the charge may be less than if the charging is done by hand. When the pig iron and the scrap available do not make it possible to arrange for a charge containing manganese within these limits there may be added ferromanganese or spiegel in amounts adequate to arrive at the required percentage of manganese.

Decarbonization.

The oxidation of carbon takes place in the presence of silicon and manganese at the outstart of the melting. Its elimination in the form of carbon oxide is the more rapid the higher the temperature of the furnace and the more oxidizing the atmosphere. An almost neutral atmosphere or one containing only a slight excess of oxygen retards its elimination. On the other hand, too poor a gas or an excess of air may lead to too rapid a lowering of the carbon. When all the metallic materials (pig iron and scrap) and all the basic materials (lime, dolomite and oxide of iron) have been melted, then the bath is oxidized through the intermediary of the slag. At this moment the metallic bath must still contain enough carbon in order to "work"—that is to say, in order that the carbonic oxide in escaping may create a boiling action, which aids the transmission of heat between the furnace and the metal through the intermediary of the slag. Immediately after the melting the surface of the metallic bath is still in direct contact with the flame. The fusion of the steel scrap has formed a good deal of oxide of iron, a part of which combines either with the silica or with phosphoric acid, forming a cinder which is very rich in protoxide of iron and which floats on the surface of the metal.

From this moment on, the metal is withdrawn from the action of the gas which can no longer act upon it except through the intermediary of the slag—that is to say, it is then that the latter becomes the vehicle of the oxygen. The oxidation of the impurities in the metal is carried out by the intermediary of the iron and manganese oxides in this slag, which are brought into it by the addition of ore or are formed by the oxidation of the metal through the medium of the gaseous atmosphere in the furnace itself. From the moment when the layer of slag covers the surface of the bath two intermediaries exist between oxygen and the impurities—the slag itself and ferrous oxide. When the slag begins to cover the metal the elimination of carbon is delayed until the slag becomes sufficiently basic to be overoxidized. A slag which is not sufficiently fluid—that is to say, contains a good deal of alumina, magnesia or lime and only small quantities of metallic oxides—isolates the bath from the flame, and as a consequence retards the decarbonization. In this case it does not suffice, in order to bring about a rapid defining, to regulate the admission of air and of gas to the furnace but it is necessary in order to make the decarbonization more active to make oxidizing additions.

Very often recourse is had to rich ores low in sulphur, but as it is sometimes difficult to procure them they are replaced by rolling mill or hammer scale. These additions increase the surface of contact between the carbon and aid in its elimination. The oxidation of the carbon is made manifest by the boiling, which is produced by bubbles of carbonic oxide escaping from the molten metal. A part of the iron of these additions is reduced and enters the bath. The waste is always proportional to the quantity of slag furnished by the oxidizing agent added. The more pig iron is used in the charge the greater will be the energy with which the refining is carried through and the more important will become the addition of oxidizing agents. When the boiling of the bath has ceased or has moderated the decarbonization approaches its end.

In order to reduce to the strictly necessary amount the final additions of ferromanganese or of spiegel, and to lessen the time required for refining, several methods of decarbonization are employed. The decarbonization is carried to the extreme or the operation is stopped at the point approximately needed for the carbon contents aimed at. The heat may be stopped when the decarbonization is still incomplete; that is to say, when the carbon content is at the point aimed at. This can be done as well on an acid as on a basic hearth, provided the product is a steel high in carbon and has been made from low phosphorus pig. The stopping of the decarbonization at the points aimed at in the final product either without or with dephosphorization is sometimes done when mild or special mild steel is to be made. Then the refining is carried on until the carbon and the manganese have been eliminated entirely, their absence being characterized by the fact that the metal does not harden.

It is easier to work exactly to complete decarbonizing than otherwise, but for the production of semihard or hard steels, particularly when low phosphorus pig iron is used, this practice is costly. The additions must be increased in quantity, both for the sake of obtaining the necessary hardness and in order to counteract a pronounced oxidation. The practice of stopping the decarbonizing operation at a given point is less frequently employed when phosphoric pig iron is used. Contrary to the opinion held by certain metallurgists, it is possible, however, to manufacture certain steels of medium or high hardness by this process. As a matter of fact, it is possible in a basic furnace to stop the reducing action of carbon on phosphoric acid by sufficiently basic slag, and to

completely carry off phosphorus before the carbon has been eliminated.

When the pig iron to be treated is low in carbon, or when the proportion entering the charge must be small, that is to say, when the carbon content in the bath is too low to make sure of its working well after the bath has been melted, it is possible to substitute additions of coke for the carbon or for pig iron containing carbon. Since there are losses of carbon due to its passing directly into the slag, the carbon contents in the initial bath must be higher than in the pig and scrap process. These losses are lessened by a preliminary mixing of the coke with iron turnings, which are placed on the bottom of the hearth and are covered with scrap or other refining materials. When a partial substitution of coke for pig iron is adopted, it is necessary to use such a quantity of ground coke that the calculated contents of carbon in the mixture of coke and of iron is higher by two-thirds than the contents in the ordinary method of operation. The length of the operation is somewhat increased, but the result may be regarded as satisfactory both from the point of view of the quality of the steel and of its cost.

Desulphurization.

Sulphur is a harmful element which should be kept out of the charge altogether whenever technical conditions permit it. Whenever possible, the pig iron should not have more than 0.1 per cent. of sulphur. This element may be eliminated on the basic hearth, and particularly when running with liquid metal, but this practice is expensive and by reason of the serious difficulties which sulphur may cause in the steel works it is better to eliminate it in the blast furnace. Sulphur and oxygen are the formidable enemies from the point of view of the working qualities of the steel. They are to be feared more particularly when both of them are present simultaneously and because oxygen adds its influence to that of sulphur.

With 0.1 per cent. of sulphur the steel is short at cherry red heat, but it forges well at a welding heat. Therefore it often occurs that a steel works sample forged rapidly to a test bar does not present any cracks, although when the steel is rolled into shapes, that is to say, finished at a lower temperature, it falls into pieces in the rolls. Extra mild steel, which is always somewhat oxidized, is more particularly subject to cracks than ordinary mild steel. Therefore high sulphur iron should not in any case be used in the manufacture of extra mild steel. While for extra mild (welding) steels sulphur must be excluded entirely, and a percentage beyond 0.5 of manganese becomes harmful, this percentage of manganese on the contrary helps ordinary mild and semi-hard steel containing sulphur to an amount exceeding a limit ordinarily admitted (0.05 per cent.), when obtained for example by treating pig iron under special circumstances which is too high in sulphur. In this case the pernicious influence of sulphur is considerably reduced by adding exaggerated quantities of manganese before the end of the refining operation.

There is not a single process of desulphurization, so far known, which will permit the elimination of sulphur in the open hearth furnace to advantage and with the certainty possible in the case of phosphorus. Reference may be made to the desulphurizing processes of Rollet, Massenez, Werner, Saniter and others, which in spite of their merits do not offer adequate advantages and are not safe enough in order to justify continuous acceptance in practice. Not one of them has really offered a working solution.

On a basic lining the method of desulphurization which is most used consists in the formation of a slag containing 10 to 12 per cent. of silica, 3 to 4 per cent. of iron and 60 per cent. of lime. After getting rid of this first slag, which with the sulphur carries off also a considerable proportion of the phosphorus, a second slag is made which takes care of the dephosphorization proper. It is with this second slag kept at the desired composition that the operation is carried to a close. The elimination of sulphur is most marked the higher the initial bath was in sulphur and the higher the percentage of manganese in the material charged. In this method of desulphurization the sulphur is eliminated, not by oxidation, but by simple displacement by lime and magnesia.

The manganese decomposes the sulphide of iron as well as the oxide, and the sulphide of manganese, which is but little soluble, separates on account of its low density, passing away with the slag. By providing for a special slag for the desulphurization, it is possible under favorable conditions to carry away 80 to 85 per cent. of the sulphur in the initial charge. Manganese ores introduced into the slag are also good desulphurizers, but on account of the large quantity of slag which it is necessary to melt, the operation is much delayed, since this slag is naturally pasty, it is necessary in order to give it the desired fluidity to add fluorspar, the quantity going as high as 15 per cent. of the limestone. Fluorspar is costly and has the tendency to cut out the lining, and therefore shortens the life of the furnace. In practice, therefore, it is best not to rely too much on this process of desulphurization, nor to use sulphuric pig iron merely for the sake of economy. On account of the serious difficulties which sulphur may cause, and from which the steel works must suffer, it is best to rely upon the blast furnace to eliminate the sulphur. The use of the mixer has no other aid but to complete the action, and, really, the desulphurization in the open hearth will never be more than a makeshift.

The New Middle West Pig Iron Contract.

Secretary William Gugenheim of the Iron Buyers' Association, Springfield, Ohio, is now receiving replies from members and those interested in various ways in the manufacture and utilization of pig iron, in answer to circular letter No. 3, recently sent out. When these replies have all been received a final meeting will be called by the Contract Committee, which will be attended by the sellers to settle any objectionable points. The contract form as revised will then be put up by the association for adoption. The revised form as presented for approval is the same as published in *The Iron Age* of January 30, with slight changes. Settlements of invoices are on the 20th of each month instead of the 15th, as printed, and interpreting the last paragraph literally, the new form reads as follows:

> Failure to make shipments as per contract shall forfeit seller's right to holding buyer to this contract, and the buyer shall have the right to purchase this grade of iron in the open market and charge any excess over contract price to the seller during the interruption of shipments. Failure to take shipments as per contract shall entitle the seller to dispose of the iron in open market and charge buyer the difference.
>
> Interruptions of deliveries are subject to strikes, fires, floods and the acts of Providence.

The paragraphs given herewith have constituted the chief cause of contention between buyer and seller, and now that both sides have made concessions it is expected that the signing of an agreement between the association and the furnaces is a matter for early consummation.

The New Brunswick Iron Company, owning iron ore deposits at Lepreaux, N. S., has given a lease of the property to the Dominion Iron & Steel Company, Sydney, N. S. Development operations are to be started at once. It is said that the lease is for 80 years, and is on a basis of 25 cents royalty to be paid the New Brunswick Iron Company on every ton of ore taken. The property is located on the New Brunswick Southern Railway, close to the Bay of Fundy.

The Iron Molders' Unions of Minneapolis and St. Paul, Minn., have declared off unconditionally the strike inaugurated in those cities May 1, 1906. These strikes involved approximately 300 union molders and coremakers. The national molders' organization withdrew its support from its members and ceased paying strike benefits in January of this year.

The Machinery Trade.

NEW YORK, February 11, 1908.

Following the increase in inquiries of the previous week the demand for machinery the past week was better than it has been for some time. While the business transacted consisted of orders for small lots, these were not only more numerous, but in some cases covered a large amount of equipment. Inquiries were also more plentiful than they have been. The increase in inquiries to an extent indicates an upward trend to trade, and merchants generally feel much encouraged over the brighter aspect given to business by the larger demand developed since our last report. An especially significant feature was the increased demand for the products of one large manufacturer, the purchase of whose products is usually followed by machine tool purchases. Practically the entire business was received from the small plants, the larger interests having not yet come into the market to any extent. The tendency of the smaller buyers to come into the market more freely is helping to restore confidence, and it is hoped that they will be followed shortly by the more important interests. The railroads are doing but little buying and are sending out no substantial lists. The Chicago & Northwestern Railroad has sent out inquiries for a few machines.

Not for some time has the Navy Department issued a circular covering so many machine tools as that just sent out, the bids to be opened March 3 and 10. The circular covers over 50 machine tools, a great portion of them for the Eastern navy yards. The machines specified on the circular are printed in another column.

Machinery houses have been expecting every week to receive a substantial list of machinery requirements from the Delaware, Lackawanna & Western Railroad for its new shops at Scranton, Pa., and it has been generally reported in the trade that such a list has been prepared. These reports are not quite correct, the company intending to make no very large purchases of machinery within the near future. We are officially informed that the company does not expect to have its machine shop at Scranton ready for use until some time in 1910, and will, of course, not be in the market for machinery to equip the shop so far in advance of the completion of the building. The railroad expects, however, to be in the market some time this year for such machinery as it may need to equip its new foundry and blacksmith shop under construction and which should be completed in the fall, but the machinery for these two buildings will probably not aggregate any great amount. The foundry will be 120 x 400 ft. and the blacksmith shop 125 x 300 ft. From the sizes of these buildings it is evident that considerable additional equipment from that already bought will be installed, but they will not necessitate the purchase of a substantial lot of machine tools.

The Intercolonial Railroad of Canada will receive bids until February 15 for a 21 years' lease of its shops at Moncton, N. B. The leasing of these shops is of interest to the trade, owing to the fact that a movement is on foot to convert the shops into a car wheel manufacturing plant, and if this project goes through it is probable that considerable new equipment will be installed. Each tender must be accompanied by a certified check for $10,000, to be held by the Department of Railways and Canals in the case of the successful bidder until such time as the lessee has duly installed on the premises machinery in value to the sum covered by the check.

The New York Central Railroad has some inquiries in the market covering equipment for its new tank shop at West Albany, N. Y. The inquiries, it is understood, cover principally conveying machinery and machine shop accessories. The company is building at West Albany a one and two story boiler house, 125 x 429 ft. Manufacturers of power plant equipment will be interested in the projection of a new station at 149th street and Park avenue by the New York Central Railroad. The property needed for the undertaking has been secured, and it is understood that as soon as the rights can be secured from the Board of Estimate work on the new station will be begun.

From reliable reports it is evident that Edwin S. Cramp of Philadelphia and associates intend to go ahead with the building of their proposed ship repair plant at Norfolk, Va., where they recently purchased considerable property. The Cramp Dry Dock Company has been incorporated, with a capital stock of $100,000, and it is understood that plans have been completed for the plant, to include three marine railways, six large buildings and smaller structures. There is to be constructed a two-story machine shop, 60 x 290 ft.; woodworking plant, two stories, 40 x 80 ft., and two other buildings, 30 x 40 ft. each.

It is understood that the Hudson Companies, 111 Broadway, New York, has some inquiries out for blowers and other ventilating equipment to be used in its tunnels and stations. It is not known how extensive these purchases will be, but it is said in the trade that there will be some good sized requirements.

The Standard Oil Company has not as yet purchased the power equipment for the large plant the company is constructing at Bayway, near Elizabeth, N. J. Specifications have not been issued to the trade as yet, but the plant, it is understood, will be a large one, the building in which it will be installed being 100 x 200 ft. and three stories in hight.

The recent fire at the plant of the John A. Roebling & Sons Company, Trenton, N. J., has caused considerable comment in the trade, where it is reported that the company will have to buy considerable new equipment to replace that which was burned. It is understood that the destroyed portion of the plant will be rebuilt, and it will not be surprising to see the company come into the market shortly for new machinery.

The application of the Long Acre Electric Light & Power Company, New York, to the Public Service Commission for permission to issue $10,000,000 of preferred stock and $50,000,000 in bonds indicates that the company intends to go ahead with its power project, which was outlined in these columns some time ago and which has been held in abeyance. The company states in its application that the new preferred stock and bonds are to be used for retiring the present issue of bonds, acquiring property on which to erect power houses and substations, constructing power houses and substations, &c. The company has a small plant in operation at Forty-seventh street and Second avenue, and some time ago contracted with the American & British Mfg. Company, Providence, R. I., for the principal equipment for a large power plant. Edgar Van Etten is president and John C. Sheehan vice-president.

The Micmac Gold Mining Company, 2 Rector street, New York, has announced its intention of erecting a power plant to develop power for its mines near Bridgewater, N. S. The plant will be a hydro-electric plant to develop about 400 hp., and arrangements will be made to develop additional power as the work progresses. The company will spend about $50,000, it is understood, and the equipment will include two water wheels, two generators, motors, turbine pumps, electric hoists and the necessary equipment for a transformer station. The company will also come into the market later on for some additional mining equipment, including drills and other tools. The work will necessitate the construction of a dam 200 ft. long and 15 ft. high.

Inquiries covering power equipment to develop about 1500 hp. have been placed in the trade by the Didier-March Company, Perth Amboy, N. J. This company is erecting a terra cotta plant at that place, 140 x 165 ft.

The State Department of Public Works has rejected the bid of the Lake Erie Dredging Company, Buffalo, N. Y., for Barge Canal contract No. 9, as it exceeded the State Engineer's estimate. It is probable that the contract will be readvertised.

Chicago Machinery Market.

CHICAGO, ILL., February 11, 1908.

Trade in machine tools continues quiet, though some dealers report a number of unpretentious orders that aggregate a moderate volume of business. It is evident that manufacturing industries are restricting their purchases of new tool equipment to such machines as are indispensable to present operation, and wants of this character are, under existing conditions, not extensive. There are, however, many small shops throughout the Middle West that are still fairly well supplied with work, and it is from these sources that a large portion of the business moving is supplied. Their orders are, of course, individually small, rarely exceeding a tool or two, but it comprises a trade that is eagerly sought by the machine tool interests. No lists including a considerable number of tools have appeared in the market for some time, but it is expected that one of considerable size will be submitted within a week or two by the Chicago Board of Education. This will comprise the equipment required for the Lake High School and will amount to approximately $18,000.

There are quite a number of inquiries in the market for small power plant equipment, among which the requirements for electrical machinery and apparatus predominate. Bids are being asked on equipment for the extension and improvement of municipal electric light and water plants by a considerable number of towns and cities, but not a few of those reported to be contemplating expenditures for such improvements are, upon investigation, found to be holding their plans in abeyance.

Quarles & Quarles, Salmon, Idaho, proprietors of the local electric light plant, are planning improvements that will require the addition of a new 120-kw. three-phase 60-cycle alternator to their equipment. This addition will be used for furnishing day service for heating and power purposes, and power for mines in the near vicinity of Salmon.

The city of Lafayette, Ind., has under consideration a plan for the installation of an electric light and power plant in connection with its water works system. An estimate of the proposed improvement has been drawn by Prof. J. W.

Esterline of Purdue University, which includes a suitable building and the purchase and installation of boiler, engine and necessary electrical equipment. The expenditure contemplated under this estimate is approximately $54,000.

The Rockport Water Works Company, Rockport, Ind., A. H. Kennedy, manager, is investigating gas engines and gas producers with a view to installing motive power equipment of this kind in the plant. A capacity of from 60 to 100 hp. is desired, with a type of producer using bituminous coal. The engine will be required to drive a three-phase belt generator.

The question of adding a new generator to the equipment of the municipal electric light plant of Brainard, Minn., is under consideration by the City Council, which has, as yet, not acted upon the proposition.

Bids will be received by A. B. Wood, care New Orleans Sewerage Company, New Orleans, La., on March 1, for the construction of a new municipal electric light plant to be established at Lecompte, La. The estimated cost of the plant is placed at $10,000.

The State Board of Control, St. Paul, Minn., will receive bids on February 15 for the construction of water works at the new State prison, Stillwater, Minn. The amount to be invested in this project is placed at $15,000.

The Public Lighting Commission of Detroit, Mich., has submitted an estimate of $64,000 to the Board of Estimates for one new 2000-kw. turbo-unit, with condenser, air circulating and feed pumps, and all necessary apparatus, to be installed in the electric light plant.

The Platteville Electric Light & Power Company, Platteville, Wis., states that some time during the coming summer the company expects to purchase additional power plant machinery. G. H. Kordenat is manager.

The city of Cashton, Wis., has in contemplation the erection of a new city hall and the installation of an electric light plant. At a recent election a $15,000 issue of bonds was voted for this purpose, but owing to some irregularity was subsequently held void. The proposition will be resubmitted at an early date.

Philadelphia Machinery Market.

PHILADELPHIA, PA., February 11, 1908.

More disposition is being shown by the prospective buyer to consider the question of tools, but there is little probability that much buying will be done at the time. Idle tools are to be noted in shops in nearly all the various industries, and until these tools are again employed it is unlikely that new purchases of equipment will be made. Sales which have been recently made are restricted to single tool propositions—in many cases for a tool of a certain character which is needed by the buyer to do certain classes of work for which he is not already equipped. On the whole, therefore, the trade does not expect to see buying conditions change very greatly during the first half of the year, unless there is a resumption of business generally before that time; a moderate volume of business, however, is expected to come out, largely along the same lines as has been the case during the past few weeks.

Inquiries in the local market have not been very numerous on the whole, and in some lines they have been rather few and far between. No large propositions have come before the trade, most of the inquiries being for single tools of the smaller class. A little more business is reported by some builders of special tools, but even in this line new business is hard to start. Manufacturers of machine tools report business rather irregular, and of a day to day character. For some classes of work orders have been a little more plentiful, although individually small, while in other cases there is almost a complete cessation of new orders. Plants in almost every case are being operated on short time and with reduced forces, and 50 per cent. will probably represent about the average working capacity of manufacturers' plants. Practically no business is being received from the railroads, and under existing conditions but little is expected to come out until the railroad situation improves. Prices of machine tools as a rule are being firmly held, except in some unimportant lines. Costs of production have not decreased, the slight decline in raw materials being more than offset by the increased cost of fixed charges against the smaller productions. Competition, however, is sharp, and manufacturers and dealers are keeping in very close touch with every possible or probable buyer.

But little improvement is to be noted in the demand for export. Practically nothing has come out in this territory in the way of standard tools, while inquiry for special tools has also declined. Those transacting an established trade abroad in power transmission specialties report a fair number of orders, but individually they are not very large.

The demand for second-hand machinery and tools shows no appreciable change. Some business is being done, but it is pretty well scattered, and covers a wide range. Boilers and engines, both new and second-hand, have not been in strong demand. A few sales of equipment of medium powers have been reported, but the aggregate volume of business done has not been large.

With the foundry interests some little improvement is to be noted here and there, but generally they are not able to get enough orders to run them more than three or four days a week, and in some cases less. Consumers of both steel and gray iron castings are placing orders in an irregular manner, dependent on their own orders, which have not been very extensive, and practically nothing has been done in the way of contracting for future requirements.

Plans for improvement in connection with the elevation of the Ninth street tracks of the Philadelphia & Reading Railway were posted for estimates by Lynch Brothers, on Saturday. Two groups of fireproof buildings are included, one at the coal pocket yard, between Berks and Norris streets, and the other, a car cleaning yard, at Huntingdon street.

The City Clerk of Atlantic City, N. J., will receive bids until February 24 for furnishing about 300 lighting standards of different types. Blue prints and specifications will be exhibited at the office of the City Engineer, Room 622, Bartlett Building, Atlantic City, or at the office of Carrere & Hastings, architects, 225 Fifth avenue, New York City, where blank proposals may also be obtained.

It is understood that the Philadelphia & Reading Railway Company has decided to make Allentown, Pa., the northern terminal of its North Penn Railroad, at which point the Central Railroad of New Jersey is making extensive yard improvements. It is said that in addition to a new bridge over the Lehigh River a roundhouse and repair shop will be erected at the above point.

The Earle Gear & Machine Company has completed the construction of its new plant at Stenton and Wyoming avenues, and is now moving its office and plant equipment from the old quarters, at 141 Oxford street, this city, to the new location.

The Fischer Machine Company, manufacturer of special tools and equipment, reports an improvement in conditions. Orders have recently been booked for several large special machines, which enables the company to keep its plant going at close to full capacity.

New England Machinery Market.

WORCESTER, MASS., February 11, 1908.

Manufacturing business continues to show signs of revival. The change is gradual, but in many lines it is apparent that the upward curve has begun. The machine tool trade has not felt a reaction to any important extent. Reports from dealers and builders reveal a continuation of conditions as they have existed for several weeks. Some machinery is being sold, and inquiries promise a better business. Several supply houses report increasing sales to manufacturers.

The Blake & Johnson Company, Waterbury, Conn., machine builder and manufacturer of screw machine and other specialties, is planning to start work on its new plant as soon as the frost is out of the ground in the spring, and it is hoped that the works will be ready for occupancy this year. The company owns a large tract of land very desirably located for its transportation facilities, and the plans call for large buildings. Two plants are now operated in the heart of the city. The company has just increased the amount of its capital stock from $30,000 to $120,000. No funds were derived from the sale of new stock. The company has been working under its old charter granted in 1852, with capitalization of $30,000, the par value being $25 a share. In order to bring this up to a modern basis par was increased to $100, this ratio bringing the capital stock to $120,000. The increase is balanced by the enlargement of the plant and the growth of the business during the more than half a century of the existence of the charter.

The Gillette Safety Razor Company, Boston, Mass., is making extensive additions to its manufacturing facilities, and has been compelled to contract with a Woonsocket concern for the use of a portion of its equipment for the manufacture of new machinery. Owing to the fact that the company is establishing large foreign factories in Leicester, England; Nogent, France; Berlin, Germany, and Montreal, Canada, it has been necessary to obtain an unusually large amount of new equipment at this time, and the machine shop at the works of the company, South Boston, employing 120 men, is up to its extreme capacity, making it compulsory to do outside work under the direction of the company's inspectors.

The reorganization of the Knox Automobile Company, Springfield, Mass., has been completed, and the business will be resumed on a substantial basis, with the preferred stockholders in control. Charles L. Goodhue is president and treasurer; William E. Wright, vice-president; Charles H. Beckwith, secretary, and Albert F. Smith, assistant treasurer. The directors are Alfred N. Mayo, who has been acting as trustee, Mr. Goodhue, Mr. Beckwith and Peter Murray, all of Springfield, and C. E. Whitney, Hartford, representing the preferred stockholders, and William E. Wright,

Springfield; W. H. Chase, Leominster, Mass.; H. J. Greenwood, Gardner, Mass., and H. W. Cutler, North Wilbraham, Mass., representing the common stockholders. The company states that it will build the Knox waterless pleasure cars and motor trucks, and the same machines in water cooled.

The W. H. Page Boiler Company, Norwich, Conn., is preparing its plant, which was partially destroyed by fire recently, so that manufacturing may be resumed in the near future. The necessary new equipment has been practically secured, the company states, and repairs and other work are being rushed so that a full force may be employed at the earliest possible date. The use of this plant, however, bids fair to be but temporary, at best, for the company is building large works at Meadville, Pa., and when it is finished manufacturing operations will be concentrated there. The company manufacture heaters for house use. It makes the statement that its January production equalled that of the same month of 1907, and would have been 25 per cent. larger had it not been for the fire.

The automobile trade appears to be more hopeful than has been the case for the few months past. New business is surpassing expectations, it is said, and the slump may not be so pronounced as had been anticipated. The automobile show held at Providence, R. I., last week was a most succesful one, indicating great interest in the machine, and that at Boston in March promises to exceed all efforts of its predecessors.

The City Plate Ice Company, Hartford, Conn., is receiving estimates for the equipment of an artificial ice plant of large capacity. The work of erecting the plant will begin as soon as a decision upon equipment has been reached.

The Waterbury Clock Company, Waterbury, Conn., is revising plans for new works to be erected in that city, including a five-story factory building and a boiler and engine house.

The works of the General Electric Company, Pittsfield, Mass., have resumed operations. According to a dispatch from that city some of the departments will run on a 55 hr. schedule and others 45 hr. for the present. About 2000 hands are employed.

Cleveland Machinery Market.

CLEVELAND, OHIO, February 11, 1908.

The past week has brought out very little in the way of new business for the machine tool dealers. In fact orders so far this month are not showing up as well as they did during the greater part of January. A few sales were made to small machine shops, but they were mostly small, single tools, and usually second-hand ones. The demands of this class of trade seems to be pretty well satisfied for the present. Some inquiries are coming in, but they are not sufficient in volume to give much encouragement regarding market conditions during the next few weeks. Many buyers are of the opinion that there will be a reduction in prices of machine tools in the spring, but it is not believed that the expectation of lower prices is having much effect on the market at present. Dealers point to the fact that if a customer really needs a tool now he cannot afford to wait three months for it in the hope of getting it at a reduction of 5 or 10 per cent. from present prices. Now and then a dealer is informed by a customer that if conditions continue to grow more favorable during the next few weeks he will reinstate an order that was canceled late last year, but as yet none of these canceled orders has been renewed. While conditions are growing better in manufacturing lines, few plants are being operated as yet at their normal capacity, and as long as some of the machines in metal trade shops remain idle the managers will not come in the market for more machine tool equipment. Although prices are being pretty well maintained, some dealers are making concessions to move tools on which they are overstocked.

The plants of the most of the machine tool builders are busy and some of them are running at full capacity, but the latter are those that were fortunate enough to have a volume of orders on hand before the recent slump, and have not suffered much from cancellations. Many of the tool builders report an improvement in inquiries, but new orders are still scarce.

There is considerable improvement in the demand for cranes. The fact that the Youngstown Sheet & Tube Company has decided to go ahead with work on its new furnaces and mills, which was suspended in the fall, and the resumption of other suspended work is expected to encourage others to go ahead with construction work, and to have a stimulating effect on the crane and heavy machinery market. An improvement is noted in the demand for industrial cars and other equipment for mining operations in Mexico, some good sized orders having just been placed by Mexican mining companies that do not appear to have been seriously affected by the recent depression.

Bolt manufacturers report considerable improvement in their orders, but their business is as yet far from normal. Dealers in mill supplies report business light. Most of the orders that are being placed are small.

The Morgan Engineering Company, Alliance, Ohio, received an order last week for 11 cranes, to be built for the Youngstown Sheet & Tube Company. The latter company had an inquiry out for 19 cranes about three months ago, but the placing of the order was delayed because work on its large extensions was temporarily suspended. Most of the cranes will be of special design for pipe handling purposes. The company expects to deliver the cranes in about 90 days. During the week the Morgan Engineering Company also received orders for two 50-ton cranes from the Indiana Steel Company, Gary, Ind.; one 40-ton crane, Yampa Smelting Company, Salt Lake City, and two steam drop hammers, Ford Motor Company, Detroit. The company has recently received a number of other good inquiries, and reports that the outlook for the year is good. The plant of the company is being run at nearly its full capacity.

Additional details regarding the contract for cranes placed by Julian Kennedy, consulting engineer for the Youngstown Sheet & Tube Company, Youngstown, Ohio, with the Alliance Machine Company, Alliance, Ohio, show that this company is to furnish the three largest cranes. Two are 80-ton cranes, with 89-ft. span, being six motor patented four girder ladle cranes, with 25-ton auxiliary trolleys; the bridges are to be equipped with series parallel drives. One is a 30-ton, 92-ft. span four motor crane with five ton auxiliary hoist. All motors of 25 hp. and over are to be of the mill type, while all controllers over 50-hp. are to be of the magnetic type.

The Atlas Car & Mfg. Company has just received some good sized orders for industrial cars, and with a number of other inquiries that have come in recently it expects to close other contracts in a short time. The new orders include a large one for center bottom dump ore cars for an ore road in Mexico, and another for gable bottom dump cars. The company has also received an order from a smelting company for a number of electrically driven scale charging cars and for some concentrate cars, electrically driven. A few days ago the company made a good sized shipment of slag cars to Mexico. With the orders and inquiries on hand the outlook for a good volume of business during the year is satisfactory to this company.

The new plant of the Snyder Electric Mfg. Company, Canal Dover, Ohio, is nearing completion, and will be ready for operation in about six weeks. The company has elected the following officers: President, S. Toomey; vice-president, Theodore Peter; secretary and treasurer, Charles H. Horn; general manager, Ed Snyder.

The Standard Clutch Company, Sidney, Ohio, recently organized with a capital stock of $30,000, it is announced, will soon begin the erection of a foundry. The company has effected its organization by the election of the following officers: Judge E. L. Hoskins, president; W. P. Harmony, vice-president; James Van Riper, secretary, and Oliver Forrar, treasurer.

As a result of the growth of its business the Standard Tool Company, Cleveland, has increased its capital stock from $750,000 to $1,000,000. The company's plant will be greatly enlarged about April 1 by the occupancy of large buildings adjoining which are now occupied by the Standard Welding Company. The latter company will move into its new plant about that time.

The Kent Machine Company, Kent, Ohio, recently organized to manufacture concrete mixers, cement block machines, &c., has placed orders for several thousand dollars' worth of machinery equipment. The company will occupy the plant formerly occupied by the Kent Mfg. Company, which recently moved to Franklin, Pa.

The Runyon Concrete Machinery Company, which recently moved from Cleveland to Canal Dover, Ohio, where some of the local people became financially interested, has elected the following officers: President, H. E. Gresham; vice-president, O. M. Himes; secretary, H. W. Streb; treasurer, S. L. Holmes. The officers, with C. M. Runyon, A. W. Krumhar and F. Smith, constitute the Board of Directors.

Cincinnati Machinery Market.

CINCINNATI, OHIO, February 11, 1908.

There is little, if any, change for the better in the local machinery market. Inquiry is a little more pronounced, and if anything actual sales are a little better than earlier in the month. The situation is more noticeable to the sales agencies, most of which have done considerable business, comparatively speaking, although there are no large bills being sold, such as lots of a half dozen or more machines. Those sales which have been made are, for the most part, single tools and to concerns whose shops are temporarily closed down, to replace worn or out of date types. Some sales have been made of special machinery, and there have been some good sales made of medium and smaller sized units in power generating machinery for Western and Southern installa-

tions. There have been also some fairly good sales of second-hand machinery. Concerns manufacturing pattern making lathes report some business, and there has been a little activity in milling machines. The Chicago, Milwaukee & St. Paul is accredited with a few scattering purchases in this field of lathes and similar tools.

Constructing engineers are figuring on several hundred thousand dollars' worth of building in municipal fields, bonds for this class of security being in active demand and easily floated at this time.

The machine tool manufacturers alone see little improvement or prospects for any business of consequence for the immediate future. Such buying as is coming out is restricted to single tools and for immediate requirements, the dealers being almost entirely inactive. The conservative element of local manufacturers is discussing very recent articles in the daily newspapers and deploring the tendency of the writers to sensationalism. An article published in a Saturday paper would tend to suggest a big purchase of tools by European parties, and as this sort of thing is being most carefully scrutinized by hundreds of big manufacturers, not alone here, but elsewhere, the moral effect of such a publication, which was intended doubtless by the writer to throw out the meaning that prices were being rigidly maintained, is apt to have a diametrically opposite effect. As a matter of fact, the sale referred to was made and the price was maintained, but the incident was merely one of regular occurrence, or, at least, frequent occurrence in the daily business life of the tool manufacturing concern in question, and was not of enough consequence to warrant such sensational printed comment. That inquiries for tools are accompanied by requests for material reductions in price and offers of business at discounts ranging from 10 to 13 per cent. off the net list is true, but so far but one hint of a cut having been made and traced to the firm in question is officially denied by the head of the business, and local competitors, whose business it was to investigate the matter for the benefit of the trade, do him the honor to acknowledge it officially. Canadian interests using American tools have been in evidence during the week, and some offers of business have been made to local tool makers provided something like 13 per cent. discount was allowed. A case in point was two 30-in. lathes for immediate shipment. The concern to which the business was offered at the sacrifice refused it. The consensus of opinion among those who are naturally most interested in the maintenance of prices and the state of trade is that the very slight volume of business offered at this time is under loyal price maintenance, and to make price concessions on such insignificant demand would be exceedingly bad business practice.

George E. Eliot, chief chemist at the plant of the Lunkenheimer Company, will speak Tuesday evening, February 11, before the Stationary Engineer's Club of Cincinnati. His subject is "Corrosion in Steam Plants."

Everything is in readiness for operation of the new foundry plant recently established at Westerville, Ohio, by Harry T. Hance and associates. The machinery from the Hance foundry in Plain City was taken to Westerville and installed in the shop of the old Westerville foundry, and an eight-ton cupola with latest improvements purchased.

The following officers were elected at the meeting of the Machinery and Supplies Association, which met in annual convention with the National Canners' Association, at the Sinton Hotel the past week: President, E. M. Lang, Jr., Portland, Me.; vice-president, George Cobb, Detroit, Mich.; secretary, John Staff, Terre Haute, Ind.; treasurer, Thomas Scott, Cadiz, Ohio; directors, E. M. Lang, G. A. Suydam, Chicago; Theodore Cobb, Detroit; Maurice B. Ayres, Salem, N. J.; H. W. Phelps, New York; P. A. J. Wethill, Chicago. The next meeting, if an exposition is determined on, will be in Chicago; if not, it will come again to Cincinnati.

Government Purchases.

WASHINGTON, D. C., February 11, 1908.

The Bureau of Supplies and Accounts, Navy Department, Washington, will receive bids until March 3 for the following machinery for the Eastern navy yards:

One 15-ton electric traveling crane, one 25-ton electric traveling crane, two 200-hp. boilers, one motor driven band log sawmill equipment, one bolt cutter, one motor driven sensitive drill, one 60-in. radial drill, one sensitive drill, one motor driven emery grinder, one water tool grinder, one twist drill grinder, one toolroom lathe, two back geared engine lathes, two screw cutting engine lathes, one pattern-makers' lathe, one motor driven extension gap lathe, one motor driven screw cutting lathe, three motor driven engine lathes, one motor driven crank shaft lathe, one boring and turning mill, one motor driven toolroom shaping machine, one motor driven milling machine, one motor driven universal milling machine, one motor driven chisel mortising machine, one motor driven tool grinding and shaping machine, one upsetting, forging and bolt heading machine, motor driven; one 30-in. planer, one drilling, boring and milling machine, one 18-in. universal milling machine, one 18-in. plain milling machine, one motor driven concrete mixing machine, one motor driven vertical drilling machine, one pipe threading and cutting machine, one 18-in. grinding machine, six duplex pumps, one motor driven power feed drill press, three vertical drill presses, one motor driven timber planer, one motor driven combination band resaw and rip saw, one 16-in. post shaper, one automatic cut-off saw, one 10-in. slotter.

The Bureau of Supplies and Accounts, Navy Department, Washington, will receive bids until March 10 for one locomotive crane, two 10-ton electric traveling cranes, one motor driven milling machine, 16 hand pumps and other supplies for the Western navy yards.

The Bureau of Supplies and Accounts, Navy Department, Washington, will receive bids until February 25 for two 20-hp. electric motors, two 7½-hp. motors with panel equipment and other supplies.

The Isthmian Canal Commission will receive bids until March 2, Circular No. 423, for pumps, punching and shearing machine and other supplies.

The Bureau of Navigation, Navy Departemnt, Washington, will receive bids until March 19 for power plant equipment at the naval training station, Great Lakes, near North Chicago, Ill.

Bids will be received by the paymaster-general of the navy, Washington, until February 25, for two horizontal tubular boilers for the Portsmouth Navy Yard.

The following bids were opened Febraury 4 for supplies for the navy yards:

Class 1, one steel plate double exhaust fan—Bidder 5, American Blower Company, New York, $255; 8, American Blower Company, Detroit, Mich., $254.40; 9, Buffalo Forge Company, Buffalo, N. Y., $216.75; 41, Drew Machinery Agency, Manchester, N. H., $261.45 and $315.30; 65, Green Fuel Economizer Company, New York, $212 and $273; 68, Harron, Rickard & McCone, San Francisco, Cal., $252.38; 69, Henshaw-Bulkley Company, San Francisco, Cal., $301.10; 159, B. F. Sturtevant Company, Hyde Park, Mass., $368.80; 201, Excelsior Equipment Company, Pittsburgh, Pa., $286.50.

Class 51, one rotary blower—Bidder 18, Brewster Engineering Company, Hoboken, N. J., $590; 69, Henshaw-Bulkley Company, San Francisco, Cal., $736; 132, Piqua Blower Company, Piqua, Ohio, $599; 139, P. H. & F. M. Roots, New York, $747; 168, Speakman Pipe & Supply Company, Wilmington, Del., $457.

Class 73, six automatic motor hoists—Bidder 35, Chicago Pneumatic Tool Company, New York, $1250; 42, Detroit Hoisting Machine Company, Detroit, Mich., $1236; 63, Richard H. Grey, East Oakland, Cal., $1500; 68, Harron-Rickard & McCone, San Francisco, Cal., $1459.24; 87, Ingersoll-Rand Company, New York, $1459.24; 166, South Park Mfg. Company, Port Huron, Mich., $1301.20; 183, Weir & Craig Mfg. Company, Chicago, $1090.

Class 121, one portable electric post grinder and one portable electric hand or breast drill—Bidder 35, Chicago Pneumatic Tool Company, New York, $114; 37, James Clark, Jr., Electric Company, Louisville, Ky., $110; 52, Frevert Machinery Company, New York, $128; 57, R. W. Geldart, New York, $97.48; 70, Hisey-Wolf Machine Company, Cincinnati, Ohio, $137; 97, Knox & Bro., New York, $130; 107, Manning, Maxwell & Moore, New York, $137; 109, Motley-Green & Co., New York, $137; 110, Montgomery & Co., New York, $137; 122, National Electrical Supply Company, Washington, D. C., $130; 144, J. B. Roache, Brooklyn, N. Y., $137; 160, Sherman-Brown-Clements Company, New York, $137; 201, Excelsior Equipment Company, Pittsburgh, Pa., $126.50.

Class 226, three motors and one steel split pulley—Bidder 56, General Electric Company, Schenectady, N. Y., $399.40; 127, Ole K. Olsen, New Orleans, La., $565; 181, Westinghouse Electric & Mfg. Company, Pittsburgh, Pa., $452; 182, Western Electric Company, New York, $472.

In the issue of February 6, opening of January 28 for machinery for the navy yards, the names and amounts of the bidders in class 184, two bolt heading, upsetting and forging machines, were incorrectly given. The following are the bids received for this class: Bidder 12, Ajax Mfg. Company, Cleveland, Ohio, $4692; 86, Fairbanks Company, New York, $4026; 91, Fox Brothers & Co., New York. $4098; 94, Frevert Machinery Company, New York, $4016; 174, Manning, Maxwell & Moore, New York, $4500 and $4550; 260, Vandyck-Churchill Company, New York, $4500; 266, Williams, White & Co., Moline, Ill., $4640.

The following awards have been made for supplies for the Isthmian Canal Commission for equipping a repair shop at Gatun, bids for which were opened January 27:

Manning, Maxwell & Moore, New York, item 1, one 18-in. engine lathe, $606; item 2, one 24-in. shaper, $585; item 3, one 34-in. upright drill, $291; item 5, one 14-in. duplex emery grinder, $84.

Niles-Bement-Pond Company, New York, item 4, one 48-in. grindstone, $120; item 6, blacksmith equipment, $110; item 7, line shafting and hangers, $40.

General Electric Company, Schenectady, N. Y., item 8, one 120-hp. motor, $296.

Under bids opened January 28 for machinery for the navy yards, the Cleveland Punch & Shear Works, Cleveland, Ohio, has been awarded class 196, one single end combined punching and shearing machine, $2070; class 187, one horizontal punching machine, $1270.

Under bids opened January 6, Circular No. 408, for supplies for the Isthmian Canal Commission, Manning, Maxwell & Moore, New York, have been awarded class 19, one vertical boring and turning mill, $1615.70.

The following awards have been made for machinery for the navy yards, bids for which were opened January 2:

Queen City Punch & Shear Company, Cincinnati, Ohio, class 71, one power punch, $285.

Henshaw-Bulkley Company, San Francisco, Cal., class 73, one groover, one double steaming machine and one hand bending machine, $133; class 74, one pump, $712.

HARDWARE

WE invite the attention of our readers to the letter addressed to *The Iron Age* by Postmaster-General Meyer, which is given on another page, together with the draft of a bill which represents his plan for a parcel post on the rural routes. It will be seen that this plan of the Department is in some respects different from that proposed by Representative Sims of Tennessee, the text of whose bill on this subject was given in these columns January 16, with comments, to which Mr. Meyer's letter is a reply. In view of his statements it will be seen that this bill, while closely resembling the Department's project, does not represent it in all details, notably in the provision relating to the remuneration of the carriers. According to the measure proposed by the Tennessee Congressman, the compensation of the rural carriers would be increased to the extent of all receipts for such parcel post service on their respective routes, not to exceed $300 to each carrier, while the Postmaster-General would leave the profit of such business to the Department, in the expectation that the increased revenue would help to make the rural service self-sustaining. We take pleasure in emphasizing this point, so that the plan of the Postmaster-General may be correctly apprehended. While the Depatment's bill is thus free from one of the minor objections brought against it, there are several weighty considerations which must occur to those who carefully look into the feasibility and desirability of the project. It may be proper here briefly to refer to some of them.

While the Postmaster-General commends his plan because in his judgment it will be of service to the merchants in the towns from which the rural routes emanate, it should be noted that with substantial unanimity these merchants are opposed to the project, as promising to give them very little help, likely to be used to a far greater extent by their troublesome competitors, the catalogue houses, and in many ways militating against the business interests of the towns and villages. Local merchants certainly do not desire a rural parcel post. One reason for this might be found in the fact that under existing regulations they are permitted to avail themselves of the service of the carriers in delivering merchandise, a service of which they can frequently make use advantageously as they are often able to secure the delivery of parcels as a matter of accommodation, frequently without pay or for a very slight and nominal fee. All this would, of course, be shut down upon if the proposed rural service went into effect, as all mailable packages carried would then need to be mailed at the regular established rates. The parcel post would thus be more expensive to its patrons than the voluntary service now permitted.

While the Postmaster-General is undoubtedly sincere in the desire to prevent this proposed rural delivery from being used by the catalogue houses, it is questionable if it will be possible to keep them from being the principal beneficiaries of it. Even if the provision which aims to limit the service to the merchants in the town and the residents along the route should escape evasion by the ingenious outside shippers, and if it should be sustained by the courts when attacked on account of its unconstitutionality as class legislation, there remains the objection that if the law were enacted it might readily and naturally be amended so as to open the door wide and give neighboring villages and distant cities the facilities of the rural parcel post. There is certainly reason to apprehend that sooner or later the catalogues and wares of the great mail order houses would find their way into the mails.

It is a mistake to suppose that the present equipment of the rural carriers would be adequate if the transportation of merchandise were added to their duties. Among the mailable articles, with the increased bulk and weight permitted under the proposed law, would be such goods as Coal Hods, Tinware, Tubs, Chairs, Snow Shovels, and many other bulky wares. If the business should amount to anything worth mentioning the familiar sulky or buggy would need to give place to a more substantial and capacious wagon. The carrier in the West referred to in recent daily papers who makes a round trip once a week, and in these winter days on snow shoes, carrying on an average 35 lb. of mail matter on his back, suggests the changes in equipment and method which would be necessary on many a route if the parcel post on rural routes went into effect. The expense of giving a new outfit to even a fraction of the 38,000 rural carriers would at the outset make a very respectable addition to the already handsome deficit of the Postoffice Department.

In addition to these incidental disadvantages which are inseparable from the establishment and operation of a rural parcel post, there is the fundamental objection that the carriage of merchandise is not within the province of the Government, and may much better be left to individual enterprise. This is especially the case, as it would be impossible to find a logical stopping place if the Government is to go into the business of transportation. There is no reason why the proposed limit of 11 lb. should not be extended to 25 lb., or 1000 lb., or more. If it is in order to carry Coal Scuttles and Ash Cans, why not also flour and coal? If the service is established on the rural routes where some peculiar difficulties are to be encountered, why should it not be extended to the country as a whole, permitting the shipping of merchandise of large or small bulk through the machinery of the Post Office Department? This is indeed proposed by some of the advocates of a parcel post, but we do not believe that the country is ready for such radical measures. Nor would it be favored by Postmaster-General Meyer, who is conspicuous for ability and fair-mindedness in the administration of his great department. It should, however, be remembered that the arguments for a parcel post apply with equal force to a merchandise post, and,

indeed, the turning over to the Government of the transportation interests of the country.

Condition of Trade.

There is a general agreement that each week is now recording an increase in the volume of business from the merchants, large and small, throughout the country. While not yet at all equalling the transactions usual at this season the movement is gratifying and full of promise as indicating that the commercial classes generally are actively resuming operations and getting in shape, prudently and conservatively it may be, to take care of the requirements of their customers. There is thus a gradual recovery from the shock given the whole country by the acute financial trouble which developed in October, one result of which has been to check the extravagance and liberality of expenditure which had much to do with causing the sudden reaction. The economy practiced, while the only wise policy for the individual, necessarily results in a diminished volume of business all along the line. In carrying out this policy the merchants of the country are buying cautiously for the replenishment of their stocks, and at the same time endeavoring to diminish in all reasonable ways the cost of doing business. This course pursued by the people generally and the merchants of the country while keeping down the volume of trade, is promoting a rapid return to healthful conditions, and giving a solid basis for renewed prosperity. While this condition is in a general way characteristic of the country at large, there are many sections in which the disturbance of business is much less severe than in others. This is notably the case in the agricultural sections. Merchants situated in such territory will naturally be much less affected by the depression, and will be justified in being more liberal and enterprising in the conduct of their business. It is, indeed, the part of wisdom for each merchant and manufacturer to look carefully and impartially at the conditions which affect and promise to affect his trade, and to act accordingly, making preparations for a large or small volume of business, according to the indications. With the prevailing conservatism there is a special call for energy and hard work to make the best of the opportunities which present themselves, and to transact a good volume of business and realize a profit even when this is a matter of more difficulty than usual. The market gives some indications of weakness, as manufacturers are in need of orders to keep their plants occupied, but on the whole prices are fairly well maintained. To this end the conservatism manifested by the large producers of the raw material contributes much. There is evidence of the increasing abundance of money, and collections are becoming steadily easier.

NOTES ON PRICES.

Wire Nails.—The amount of new business now coming to the mills is moderate in volume, but regarded by the manufacturers as quite satisfactory in comparison with the light tonnage which is being placed in other lines. The Wire Nail manufacturers are certainly taking care of a larger volume of business than at any time since last fall. The announcement by the manufacturers early in January that no change would be made in prices for the spring trade undoubtedly had a beneficial effect, as is seen by the orders which were placed and upon which shipments are now being made. Quotations are unchanged, as follows, f.o.b. Pittsburgh, plus actual freight to point of delivery, 60 days, or 2 per cent. discount for cash in 10 days:

Carloads, to jobbers	$2.05
Carload lots, to retail merchants	2.10

New York.—A slight improvement is noticed in the movement of Wire Nails in small lots at store. December was the dullest month of 1907 in the local market, but January showed a moderate increase. In consideration of the comparatively light business the regular price is being remarkably well maintained. The local quotation for small lots at store is $2.40 base.

Chicago.—Recovery has been more marked, and has proceeded more rapidly in Wire goods than in any other of the iron and steel products. Orders and specifications continue to come forward in fairly good volume, and though buyers are not anticipating their wants as far in advance as was the case last year, yet contracts covering anticipated requirements for the early spring trade are being pretty freely made. The mills are now in position to execute orders promptly, and the vexatious delay of shipments which were a conspicuous feature of business a few months ago are no longer experienced. Prices hold firm, no irregularity being reported. Quotations are as follows: $2.23 in car lots to jobbers, and $2.28 in car lots to retailers, with an advance of 5 cents for less than car lots from mills.

Pittsburgh.—Manufacturers of Wire Nails still regard the present condition in this trade as very satisfactory, when compared with the depression and light tonnage being placed in other lines. It is conceded on all sides that the action of the American Steel & Wire Company and the Pittsburgh Steel Company in notifying the trade early in last month that prices on Wire products would not be reduced, but would be absolutely maintained was a wise one, resulting as it did in the trade placing some fairly heavy orders on which shipments are now going forward. New business now being received is of moderate volume, and the Wire Nail mills have more tonnage on their books at this time than in any period since last November. We are advised that regular prices are being absolutely maintained. Quotations are as follows, f.o.b. Pittsburgh, plus actual freight to point of delivery, 60 days, or 2 per cent. discount for cash in 10 days:

Carloads, to jobbers	$2.05
Carload lots, to retail merchants	2.10

Cut Nails.—The meeting of the Eastern Cut Nail Association will be held on the 14th inst., too late for making a report of the result this week. Manufacturers are still restricting output as much as possible to keep stocks within the limits of actual demand, which is light and for small lots. The market is irregular under these conditions, and some mills are reported as shading regular quotations considerably. With some exceptions the market is represented in a general way by the quotation of $2.05 on Steel Cut Nails at mill. Iron Nails generally should command about 10 cents more than Steel.

New York.—Demand is recognized as being moderate, but slightly improved over that of December of last year. Quotations are on the basis of $2.30 per keg, for small lots at store.

Chicago.—Cut Nails have not shared to any great extent the improved demand noted in Wire Nails, and trade continues quiet. No effort is being made by the mills to crowd their product on an unwilling market and for this reason values hold reasonably steady. Business locally is confined to small pickup orders for current requirements, there being but little buying for prospective demand. Chicago quotations are as follows: Iron Cut Nails, carloads, to jobbers, $2.38; to retailers, $2.43; steel, to jobbers, in carloads, $2.28; to retailers, $2.33.

Pittsburgh.—New business in Cut Nails is extremely quiet, orders placed being for small lots and actual needs. The Cut Nail manufacturers find it necessary to continue their policy of still restricting output as much as possible, in order to meet actual demand. Prices still continue to be shaded, and it is claimed Cut Nails have recently sold

at about $1.90 at mill. We quote Steel Cut Nails at $2 to $2.05, f.o.b. Pittsburgh, for carload lots, and small lots at $2.10, to which freight to destination is added. Iron Cut Nails are being held at about $2.15, at mill.

Barb Wire.—The anticipated spring demand is being provided for by the large trade, which is showing a disposition to stock up more freely. Quite heavy shipments have recently been made to the Southwest, where spring demand will soon commence. Shipments are also being made by the mills to other sections of the country to provide for the expected requirements. The mills regard the outlook for Barb Wire as promising. Regular prices are well maintained. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

	Painted.	Gal.
Jobbers, carload lots	$2.20	$2.50
Retailers, carload lots	2.25	2.55
Retailers, less than carload lots	2.35	2.65

Chicago.—New business of fair proportions and specifications on held up contracts combine to furnish a volume that under present conditions is regarded as quite satisfactory. The mills are busier now with shipments than at any time since trade began to fall off last year. The near approach of the open season in the South is stimulating the demand from that section, and the Northern trade is ordering more freely for later shipment. We quote as follows: Jobbers, Chicago, car lots, Painted, $2.38; Galvanized, $2.68; to retailers, car lots, Painted, $2.43; Galvanized, $2.73; retailers, less than car lots, Painted, $2.55; Galvanized, $2.85; Staples, Bright, in car lots, $2.35; Galvanized, $2.65; car lots, to retailers, 10 cents extra, with an additional 5 cents for less than car lots.

Pittsburgh.—The large trade continues to place orders quite freely for Barb Wire to cover the expected spring demand, shipments on which are now going forward from the mills. The spring trade in the Southwest will open very soon, and shipments to that territory recently have been quite heavy. Jobbers are disposed to take in material more freely, and the outlook for Barb Wire is regarded by the mills as very promising. We are advised that regular prices are being absolutely maintained. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

	Painted.	Gal.
Jobbers, carload lots	$2.20	$2.50
Retailers, carload lots	2.25	2.55
Retailers, less than carload lots	2.35	2.65

Plain Wire.—The mills are in a position to make fairly prompt shipments, which are now going forward, covering new orders and specifications on contracts. While manufacturers have not expected as heavy demand as they had last year, they regard the situation as satisfactory in view of general conditions. The market is reported as being well maintained. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

Jobbers, carload lots	$1.90
Retailers, carload lots	1.95

Chicago.—Fence manufacturers are preparing for a fairly active trade, and while ordering conservatively, are freely placing orders for such tonnage of Wire as they will require for the next 60 to 90 days at least. There is apparently no disposition to overestimate the prospective demand for fencing, but at the same time the opinion prevails that the prosperous condition of farming communities warrant the expectation of a fairly good business. Quotations are as follows: In car lots, to jobbers, $2.08, f.o.b. Chicago, and to retailers, $2.15.

Pittsburgh.—While the amount of new tonnage being placed at the present time in Plain Wire is not as large as at this time last year, it is regarded by the mills as very satisfactory in view of the general dull condition in other lines. The mills are able to make fairly prompt deliveries, and shipments going forward on new orders and specifications against contracts are fairly heavy. Makers of Fence Wire advise us that regular prices are being absolutely held. Quotations for base numbers 6 to 9 are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

Jobbers, carload lots	$1.90
Retailers, carload lots	1.95

Binder Twine.—The International Harvester Company announced prices on Binder Twine, January 22, the schedule for small lots being as follows: Sisal and Standard, 8½ cents; Manila (600-ft.), 11¼ cents, and Pure Manila, 13 cents. About 10 days later the Plymouth Cordage Company announced a schedule of prices in which Sisal and Standard prices were placed ¼-cent. per pound less than those made by the Harvester Company. The last named company then gave notice of ¼-cent reduction on Sisal and Standard, these being the same prices made by the Plymouth Company. The Plymouth Company's prices on Manila grades are the same as those announced by the Harvester Company except that it includes a 550-ft. Standard Manila at 9¾ cents. Western prices, delivered at Chicago, Milwaukee, Peoria, St. Louis and other central distributing points, are now reported to be as follows, for small lots, with carload lots ¼ cent less; five ton lots, ⅛ cent. less, central delivery, fall terms:

	Cents per pound.
Sisal	8¼
Standard	8¼
Standard Manila (550 ft.)	9¾
Manila (600 ft.)	11¼
Pure Manila	13

It is the custom of manufacturers, in view of the extra transportation, to add ¼-cent for Twine sold f.o.b. Northwestern and Missouri River distributing points. These prices are lower than those of last season, and places carload lots of Sisal and Standard Twine at 8 cents per pound. In 1907 the Harvester Company announced prices on January 14 and in 1906, on March 1.

Screen Doors and Window Screens.—The directors of The Continental Company held a special meeting at Detroit, Mich., February 6, to consider the trade situation relating to Screen Doors and Window Screens. The recent advance in the price of Wire Cloth taking effect February 1 was discussed, but it was decided that no advance be made on Screen Doors and Window Screens at this time, but that the time be extended from February 15 to March 1 for receiving orders for collective distribution cars. It is necessary that all orders and specifications be sent in promptly through the jobbers, so that goods may be made up and ready for shipment as soon after March 1 as possible, and may reach the retail merchants in time for the opening of the season, which is only a few weeks off.

Twist Drills.—Reports touching on a recent conference of leading Twist Drill manufacturers are to the effect that most of them are still enjoying a moderate volume of business and are not disposed to make material concessions in prices. Slight irregularities, however, are reported here and there, and there is keen competition among smaller producers for the business open to their brands.

Rope.—Reports as to demand vary with different manufacturers, some reporting business equal in volume to that of last February, while with others it does not quite reach that mark. This month is not one in which an active business is expected. Under these conditions prices show a tendency to yield a little, though manufacturers are generally working up Fiber which was purchased at higher prices than those now obtainable. Quotations are as follows, for base sizes: Pure Manila, 11 to 11¼ cents; B quality grades down to 8 to 9 cents; Pure Sisal, 7¾ to 8 cents; lower grades Sisal, 6¾ to 7 cents; No. 1 Jute, ¼-in. and up, 7½ cents; No. 2 Jute, 7 cents.

Window Glass.—Production of Window Glass has increased slightly, and it is anticipated that additional factories will gradually get to work. It is reported, however, that differences between the various classes of workmen, interfere with factories obtaining the necessary operators. A statement is made to the effect that a limited number of manufacturers, at a recently held meeting, decided that future machine made Glass prices would be met by them. Demand continues limited. Prices recommended at the last meeting of the Eastern Window Glass Jobbers' Association, for Greater New York, are as

follows: Single strength, 90 and 25 per cent.; double strength, 90 and 30 per cent. discount from jobbers' list. These price are, however, not closely adhered to.

Linseed Oil.—In the face of an exceedingly moderate demand for Oil, the Flax Seed market continues high and the Oil market quite strong. Stocks of Oil carried by large consumers and by the mills are comparatively low for this season. Business is restricted to actual necessities, which are light, and sellers do not seem disposed to make concessions in price to stimulate buying. Prices in five-barrel lots are as follows: State and Western Raw, 42 cents; City Raw, 44 cents per gallon. Boiled Oil is 1 cent per gallon advance on Raw.

Spirits Turpentine.—The local market is featureless and demand light. Buyers are not purchasing large quantities owing to the uncertainty of the stability of market, as prices have eased off about ½ cent since last week. The New York market is represented by the following quotations: Oil Barrels, 54 to 54½ cents; Machine Made Barrels, 54½ to 55 cents.

Sash Cord.—As stated in a former issue, the market for Sash Cord has steadied and nearly all manufacturers are now maintaining the price recently established. The present market to the retail trade may be fairly represented by a quotation of 23 to 23½ cents per pound, base.

Wrought Goods.—The price of Hooks and Staples and other articles usually referred to as Wrought Goods does not seem to have been affected by the reactionary tendency now observed in many lines. These goods, however, have been sold so close that there is little room for concessions with raw material at its present level. The market may be represented in a general way by a discount of 85 and 10 and 10 per cent.

Lawn Mowers.—Much of next season's business in Lawn Mowers has been booked at prices which are fairly uniform, according to grade, and on the whole satisfactory to the manufacturers. The differentials for size are pretty well adhered to, and this has been a feature of the market, since many makers of Mowers have enforced them this season. The present scale of prices may be represented in a general way by a quotation on the cheapest Mowers of $2 for the 10-in. size, with an advance of 10 cents for each increase in size. Better grades are from $2.50 up, with a differential of 15 to 25 cents for size.

Bolts, Nuts, &c.—There has been a further softening of the market on Bolts, Nuts and allied lines. Some works are almost without business to keep them going, as a result of absence of orders from interests which are usually large consumers of these goods. On the part of the Hardware trade purchases are light.

Conductor Pipe, Elbows, &c.—The market for Conductor Pipe, Gutter, Elbows, Shoes, &c., is without features of novelty, continuing to exhibit the irregularity which has prevailed for some time. In the East conditions are not so bad, but in the West there is much irregularity, so that it is difficult to give quotations which would fairly represent the market as a whole. Hopes are expressed that the situation will soon clear, and improvement may be brought about at any time by a renewal of the understanding among the more important manufacturers, some of whom are making active efforts with this end in view.

Requests for Catalogues, Etc.

The trade is given an opportunity in this column to request from manufacturers price-lists, catalogues, quotations, &c., relating to general lines of goods.

REQUESTS for catalogues, price-lists, quotations, &c., have been received from the following houses, with whom manufacturers may desire to communicate:

FROM MILLIREN-BUCHANAN HARDWARE COMPANY, which will soon open up a general Hardware, Implement and Vehicle store at Fort Worth, Texas. The company's present address is 1200 Granger street.

FROM SHAMBAUGH HARDWARE COMPANY, Shambaugh, Iowa, G. H. Stipe, proprietor, which has opened up with a new stock of Shelf Hardware, Stoves, Implements, Paints, &c.

FROM SMITH-BROWN HARDWARE COMPANY, which has purchased the Hardware business of J. D. Sentell, Mangum, Okla.

RETAIL HARDWARE CONVENTIONS.

During the next few weeks the following retail Hardware conventions will be held. Where the asterisk appears elaborate plans are being made by the association officials for the accommodation of Hardware exhibits by manufacturers and jobbers.

NEBRASKA ASSOCIATION,* Lincoln, February 11-14. Secretary, J. Frank Barr, Lincoln.

WEST VIRGINIA ASSOCIATION, Elkins, February 18, 19 and 20. Secretary, Leslie Hawker, Shinnston.

INDIANA ASSOCIATION,* Indianapolis, February 18-21. Secretary, M. L. Corey, Argus.

IOWA ASSOCIATION,* Cedar Rapids, February 18-21. Secretary, A. R. Sale, Mason City.

NEW YORK ASSOCIATION,* Buffalo, February 18-22. Secretary, John B. Foley, Syracuse.

OHIO ASSOCIATION,* Columbus, February 25-27. Secretary, Frank A. Bare, Mansfield.

MINNESOTA ASSOCIATION,* St. Paul, February 25-28. Secretary, M. S. Mathews, Guaranty Building, Minneapolis.

ILLINOIS ASSOCIATION,* Peoria, February 26-28. Secretary, L. D. Nish, Elgin.

MISSOURI ASSOCIATION, St. Louis, February 27 and 28. Secretary, F. D. Kansteiner, St. Louis.

PENNSYLVANIA ASSOCIATION, Cambridge Springs, March 3, 4 and 5. Secretary, J. E. Digby, McKees Rocks.

NEW ENGLAND ASSOCIATION,* Boston, March 11 and 12. Secretary, Charles L. Underhill, Somerville, Mass.

Missouri Hardware Association.

Notice has been issued of a change in the dates of the annual meeting of the Missouri Retail Hardware Association. The convention will be held in St. Louis, as heretofore announced, but the dates will be February 27 and 28 instead of February 24 and 25, as previously intended.

Ohio Hardware Association.

Frank A. Bare, secretary of the Ohio Hardware Association, advises us that all the indications point to a larger attendance at the approaching annual convention that at any former meeting. The past two weeks have brought quite a number of accessions to the membership. No formal papers will be read during the meeting, the different sessions of the convention being devoted entirely to the consideration and discussion of topics brought up through the medium of the Question Box.

Minnesota Hardware Association.

The programme for the meeting of the Minnesota Retail Hardware Association has just been determined, and an unusually interesting and instructive series of sessions is promised. Among the special papers and addresses will be the following: "Special Sales and Bargain Days," by H. L. Chaffee; "Heating and Ventilating," by H. J. Fueller; "Business Methods in a Hardware Store," by W. H. Stepnek, and "Effective Advertising," by A. S. Saberson, Berkley System Company. There will also be an address by Governor Johnson of Minnesota, and the address of welcome to St. Paul will be delivered by Mayor R. A. Smith. Addresses on the subject of insurance will be made by John A. Hartigan, Insurance Commissioner of Minnesota, and by John J. Lee, Jr., who will discuss "Bookkeeping and Fire Law Adjustments." Secretary M. L. Corey of the National Association will address the convention on parcel post, and National Vice-President A. T. Stebbins will have something to say on the progress and development of the national body. Ex-President H. F. Emery of the North Dakota Association will tell something about the work accomplished, and in prospect by his association. Question Box matters, as usual, at the Minnesota meeting will come up for attention and discussion at each of the business sessions. An elaborate programme of entertainment has also been completed.

Connecticut Hardware Association.

THE Connecticut Hardware Association held its annual convention at the Colonial Club, Meriden, on Monday and Tuesday, 10th and 11th inst. The opening session Monday afternoon was largely attended for the first day, a good proportion of the membership being represented. Besides the routine of the business meeting, which included the election of Eli C. Birdsey, Meriden, as president, there were interesting discussions in executive session of pertinent trade topics, special attention being given the catalogue house question.

President Irving C. Treat announced the following committees to serve during the convention:

RESOLUTIONS: George Bassett, New Haven; L. L. Rosenberg, New Haven; R. E. Page, Hartford.

NOMINATIONS: C. G. Agard, Tarrington; A. H. Abbe, New Britain; F. M. West, Bridgeport.

LEGISLATION: Eli C. Birdsey, Meriden; A. H. Abbe, New Britain; F. D. Jordan, Willimantic; F. H. Smith, Middletown; F. L. Leighton, New Haven; A. R. Jones, Danbury.

QUESTION BOX: W. A. Church, Derby; R. G. Church, Meriden; H. L. Mills, New Britain; J. E. Hubbell, Norwalk; J. M. Page, Naugatuck.

President's Address.

After the reading of the minutes by Recording Secretary James De F. Phelps, President Treat read his annual address, as follows, in part:

When you made me the executive head of this association, one year ago, I did not find myself the captain of a sinking ship. Everything was healthy and in perfect order. No reforms were needed. I should liked to have found the opportunity to make the association three times as large, but our organization has been ably managed ever since it came into existence, and the best I could hope to do was to keep it headed up to the wind, with all on board working with enthusiasm and accord, just as I found it.

The past year, while not a record breaker, has been a year of satisfactory progress. The directors have been called together twice, and there have been four meetings of the Advisory Committee. The special committees appointed to look after the eastern and western sections of the State, have, with the assistance of the executive officers, succeeded in adding 12 firms to the membership roll.

At this time I want to say a word about the fire insurance advantages offered by the Hardware mutuals. To every one who avails himself of this insurance there is a clear saving of from 30 to 40 per cent., and I cannot, for the life of me, see why we are not all profiting by it. Every one who has had a fire will tell you that he has received an adjustment that was perfect satisfactory.

You all know that some of the manufacturers dispose of their seconds to dealers in second-hand goods, and others who are beyond the pale of the legitimate Hardware dealers. We are cut out of an item that rightfully belongs to us, and it seems to me that we should urge these manufacturers to put their seconds up at auction in some of the large auction houses in New York, and thus give everybody an opportunity to obtain a share of them under fair conditions.

Vice-President Eli C. Birdsey, who occupied the chair during the reading of the president's address, spoke warmly of the excellent and energetic work which has been done during the year by Mr. Treat.

Report of Secretary Phelps.

Secretary Phelps' report was in part as follows:

The year 1907 can properly be classed as an aggressive one, as far as the work of your officers is concerned, for headed by a man for your president in whose make-up are the essentials that go to make a leader, and whose main idea has been to strengthen this organization by having every Hardware dealer in this State on our membership roll if possible, you can readily understand that there has been little left undone along this line. Success has crowned our efforts, and we would venture to assert that no State has a larger percentage of its Hardware merchants as members of its State organization.

Am pleased to note more interest in the insurance feature of our association. Only members of their State Hardware associations are eligible for Hardware mutual insurance, and our members are now reaping the benefit, a benefit that does not fail to prove itself one to every merchant. There are some to whom the social feature of association life does not appeal. For them we are sorry, for I believe the social element of association work to be the one that does us the most good in the getting together, the giving up to others some of the knowledge we have gained by experience and otherwise, and in turn gleaning from them the same sort of thing. We eliminate to more or less extent some of the selfishness in all of us; we the more readily understand that this life is a give and take game, not one sided.

We get away from our business, forget the humdrum and go back with a few new ideas, renewed, let us hope, with the spirit that should govern all good Hardware-men, that of fighting the battle hard but honorable, honorable with a large capital H. I believe that our attendance at our several meetings surely tends to make all of us broader minded men and better men, bringing us nearer the goal that should be the ambition of every good Hardware merchant to reach, that of being identified with a class worthy of being in the front rank with any body of men on God's footstool. That this should be the ambition of the Hardware fraternity is not strange, for what calling is there in the business world that demands more hard preparation, conscientious work in order to be successful than that of the Hardware merchant? Hence it is not strange that in the hard grind, training to be right up to the minute and necessary refining, that the product should be fully up to and in many cases above the average.

The reports of Financial Secretary F. A. Farrar and Treasurer Lewis B. Crosby showed the finances of the association to be in excellent condition.

F. T. Terry, Ansonia, made the report for the Grievance Committee, which dealt with the sale of "seconds" by manufacturers to pawnbrokers, and the discussion that followed was along this line.

A letter was received from President S. R. Miles of the National Retail Hardware Association, containing valuable suggestions as to topics for discussion at the convention and work to be done during the year.

New Officers.

The Committee on Nominations, making its report through Charles G. Agard, chairman, submitted the following ticket of officers, who were unanimously elected:

PRESIDENT, Eli C. Birdsey, Meriden.

FIRST VICE-PRESIDENT, Frank T. Terry, Ansonia.

ELI C. BIRDSEY,
President.

F. T. TERRY,
First Vice-President.

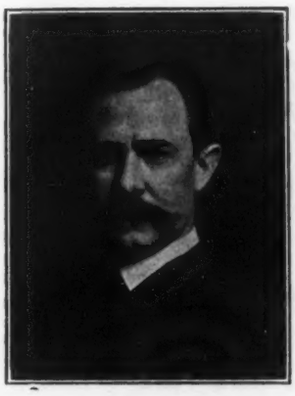
J. DE F. PHELPS,
Recording Secretary.

SECOND VICE-PRESIDENT, F. D. Jordan, Willimantic.
RECORDING SECRETARY, James De F. Phelps, Windsor Locks.
FINANCIAL SECRETARY, F. A. Farrar, South Manchester.
TREASURER, Herbert L. Mills, New Britain.
DIRECTORS, to succeed F. D. Jordan, for three years' term, expiring 1910, Lewis D. Crosby, New London. For three years, George Fuller, Canaan; R. C. Lightbourn, New Haven; Charles S. Templeton, Waterbury; D. N. Clark, Shelton.

Secretary James De F. Phelps was elected to represent the association at the convention of the National Association at St. Louis.

A. H. Abbe's Address.

A. H. Abbe, New Britain, acted as representative of National President Mills, being chosen because of his



I. C. TREAT,
Ex-President.

F. A. FARRAR,
Financial Secretary.

membership in the wholesale and retail joint committee of the National Association. He took up the subject of parcel post legislation, referring to the original movement, when many assisted it in ignorance of its real workings in business. The bill proposed by Postmaster-General Meyer does not promise serious results in itself, perhaps, said Mr. Abbe. But it would be the beginning of a movement which would have no end until the system had become universal. Although there is assurance that no parcel post legislation will be enacted by the present Congress, there should be no diminution of association efforts in opposition. Parcel post would not drive the merchant out of business, but it would seriously affect him. His profits would be cut and it would be strenuous competition. Mr. Abbe referred to another bill which has been introduced in Congress, providing that postmasters shall not furnish lists of names of persons receiving mail at their offices, provided that to any person, firm or corporation, who may make affidavit before any postmaster that such person, firm or corporation is compiling a directory for public use from such list of names, postmasters may furnish such lists upon the payment of a sufficient sum of money for the expense of copying names, not to exceed $5 per 1000 names. Mr. Abbe suggested that this bill bears earmarks of the work of catalogue houses. He asked that the bill and the matter of parcel post be referred to the Committee on Resolutions, which was done.

Other Addresses.

President F. Alexander Chandler of the New England Hardware Dealers' Association was present as a guest and spoke briefly of association work, especially as it relates to combating parcel post. He called attention to an effort now being made in the Massachusetts Legislature to secure an indorsement of this measure, and stated that everything possible would be done to combat the movement.

Secretary Charles L. Underhill of the New England Association was also a guest. He spoke of the value to business man in entering politics, in order that measures inimical to his interests may be intelligently and effectively combated. Mr. Underhill is a member of the Massachusetts Legislature, and clerk of the Committee on Federal Relations, before which the parcel post matter will be heard, and he has arranged the date of the hearing for March 12, when the annual convention of the New England Association will be in session. This will insure a large attendance of Hardware men at the hearing.

New York Hardware Association.

The official programme for the meeting of the New York State Retail Hardware Association has just been issued. Among those who will address the convention at different sessions will be S. R. Miles, president of the National Retail Hardware Association: H. J. Fueller, Abram Cox Stove Company, Philadelphia, whose subject will be "Specialization in Hardware Business;" E. W. Heath, Heath & Milligan Mfg. Company, Chicago, on "An Honest Paint Law;" E. J. Cornish, Carter White Lead Company, Chicago, on "Lead Pigments," and R. R. Williams, *The Iron Age*, and George B. Bradford, *Hardware*, New York City. The morning session on the 21st will be exclusively devoted to the discussion of topics suggested by the Question Box. Among subjects already recommended for discussion at this session are the following:

Shall the scope of our association be extended to include in our membership retail Implement dealers, who have stores and warehouses and conduct their business in a legitimate manner?

Shall this association favor a "Pure" Paint law? If so, what requirements are necessary to protect merchants and consumers and at the same time be perfectly fair to the manufacturer?

Shall this association favor an amendment to the law regulating license to peddlers, so that a State license shall be abolished and the licensing of peddlers be governed entirely by local laws of cities, incorporated villages and towns?

Methods of handling small accounts.

Saving cash discounts on goods that have not arrived when bill falls due.

In what way can merchants avoid contributing to fairs, programme advertising, church book advertising and many other petty calls for money that merchants are subject to?

The Question Box will be placed in the convention hall, and it is the earnest desire of the officers that it be freely used by the members for such queries as occur to them.

Circulars have been issued giving particulars as to hotel accommodations, railroad rates, &c. A special rate of one and one-third the regular fare for the round trip has been arranged for on the certificate plan on all roads in the Trunk Line Association.

Price-Lists, Circulars, Etc.

Manufacturers in Hardware and related lines are requested to send us copies of catalogues, price-lists, &c., for our Catalogue Department in New York; and at the same time to call attention to any new goods or additions to their lines, of which appropriate mention will be made, besides the brief reference to the catalogue or price-list in this column.

ROBERT MURPHY & SONS, Ayer, Mass.; Dame, Stoddard & Co., Boston, selling agents: Illustrated catalogue covering an extensive line of Mechanics' Cutlery and fine Steel Implements, including Shoe and Rubber Knives, Oyster and Clam Knives, Carpet Knives, Sloyd Knives, Banana Knives, Paper Hangers' Knives, Cork Screws, &c.

STRATTON LEVEL COMPANY, Greenfield, Mass., successor to Stratton Bros.: Catalogue F, illustrating and listing an extensive line of Spirit Levels.

IDEAL MFG. COMPANY, Detroit, Mich.: Illustrated catalogue, No. 13, of Gas Stoves and Ranges, Hot Plates, Broilers and Water Heaters, Plumbers' Supplies, Closet Combinations, Soil Pipe and Fittings and Iron, Brass and Aluminum Castings.

LAWRENCE BROS., Sterling, Ill.: 1908 catalogue illustrating and listing an extensive line of Barn and Parlor Door Hangers, Wrought Steel Butts, Strap and T Hinges and Hardware specialties. The catalogue shows many recent additions to the company's line, and will be sent to any in the trade who desire it.

H. J. FROST & Co., 90 Chambers street, New York: Illustrated catalogue covering an extensive line of Fishing Tackle.

LETTER FROM THE POSTMASTER-GENERAL.

AS correcting some misapprehensions in regard to the project of the Post Office Department for a parcel post on the rural routes we take pleasure in giving the following letter from the Postmaster-General, to which further reference is made in our editorial columns:

To the Editor: An article in *The Iron Age*, issue of January 16, on the subject of a bill "providing for the establishment of a system of local rural parcel post," which you state was drafted in this Department and introduced by Representative Sims of Tennessee, has been brought to my attention.

Evidently this article has been written under a serious misapprehension. In order that you may be informed of what the Department has recommended for the extension of the parcel post I am sending you:

1. A copy of a proposed bill "To provide a rural delivery parcel post for merchandise and other articles mailed on rural delivery routes and for other purposes." This, you will observe, represents a very different measure from that you have quoted in your magazine.

2. A copy of the last annual report of the Department. Especial attention is invited to pages 9 to 11.

You will note from the copy of the bill which is inclosed that there is no intention of turning over "all receipts for such parcel post service, not to exceed $300 per annum, to each carrier." On the contrary, I invite your attention to the following which is taken verbatim from the annual report:

. . . "A special parcel post on rural routes will facilitate consumption and thereby increase the business of the country merchant. Increased trade for the country merchant means increased orders for those from whom he purchases his supplies. A further fact is that the increased cancellations will advance automatically the salaries of the postmasters of fourth-class offices. The remaining revenue derived from the parcel post on the rural routes will be clear gain and will go far toward making the rural service in time self-sustaining."

You intimate that the special rate for the local parcel post on rural routes will eventually apply to the entire postal service. The impossibility of this is apparent when attention is directed to the cost of railroad transportation, which has no part in the former service. About $45,000,000 was paid last year for mail transportation and $6,000,000 for postal cars.

As to the contention that has been made in some quarters, and which you refer to indirectly, that the large mail order houses would, under the proposed law, utilize the special parcel post on rural routes through distributing offices: The Department will recommend a provision (contained in the inclosed tentative draft of a bill) which will prevent any such use of the routes. It should also be borne in mind that even in the absence of such a specific prohibition any systematic attempt upon the part of a mail order house to thus deliver its wares would necessitate the employment of many thousands of local representatives. The catalogues of these concerns show pretty plainly that they attribute their success, in large measure, to their remarkably low selling expense, and that the absence of any sort of agent is the principal feature of their argument in accounting for the supposedly low prices of their goods.

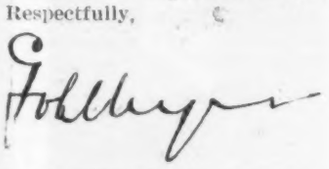
It is hard to see where any appreciable advantage would accrue to the patrons of the rural routes by permitting books and other printed matter to be distributed at the special local rate. Should they be included, only such publications as had their regular place of business on a rural route or at the post office thereof could be carried, and they could be delivered only to the patrons of a route or routes within a very confined area who could be directly served by rural carriers.

The Department is advocating the establishment of a special local parcel post on rural routes because of its ability to render the service proposed with incalculable benefit to the patrons of the routes, and at a profit to itself. There is no sound reason why our rural population should be denied the facilities which can be so readily afforded. But there is every reason why the Department should do all in its power to utilize the machinery at its command. There are more than 38,000 rural routes thoroughly equipped and covered by carriers already employed. Approximately 15,000,000 of people are served on these routes, a fact which effectively illustrates the vast possibilities of the rural service, if made use of to its full capacity. As to the financial aspect of the matter, it has been estimated that if but three packages of the minimum weight were handled each trip on the rural routes now established the resulting revenue, even at the low rates recommended, would more than wipe out the present postal deficit.

Letters and petitions of individuals and associations from every section of the country, heartily indorsing the measures for the extension of the parcel post which the Department is advocating, have been received. The policy of furnishing full information upon request has been followed, and every argument, not founded upon strictly selfish grounds, advanced by the opponents of the proposed extension has been answered.

Since you have, although no doubt unintentionally, misstated the Department's position as to a number of important particulars in connection with its recommendations, I trust you will perceive the justice of informing your readers of its real views, as expressed herein.

Believe me. Respectfully,



BILL RECOMMENDED BY THE POST OFFICE DEPARTMENT.

Below is the text of the bill referred to in the above letter of the Postmaster-General. It is of interest as embodying the Department's recommendations in official and definite form:

A BILL

To Provide a Rural Delivery Parcel Post for Merchandise and Other Articles Mailed on Rural Delivery Routes and for Other Purposes.

Be it enacted by the Senate and House of Representatives of the United States in Congress assembled:

That the Postaster-General is authorized, under such regulations as he may prescribe, to establish a domestic rural parcel post at special rates of postage, for the delivery on rural delivery routes of foodstuffs (including groceries, provisions, meats, fruits and vegetables), dry goods, drugs, books and other merchandise, unless the same shall be unmailable under this act or any other act as hereby amended.

Sec. 2. That such special rates of postage on such parcels of merchandise shall be five cents for the first pound and two cents for each additional pound or fractional part thereof, and on parcels weighing less than one pound, as follows: Two ounces or less, one cent; over two ounces and not exceeding four ounces, two cents; over four ounces and not exceeding eight ounces, three cents; over eight ounces and not exceeding twelve ounces, four cents, and over twelve ounces and not exceeding one pound, five cents: *Provided*, That such postage shall be prepaid by ordinary postage stamps affixed to such parcels, and that the character of such matter shall be indicated by the words, "Rural Parcel Post," stamped on each of such parcels by the postmaster or rural carrier receiving it, *Provided further*, That the establishment of such rural parcel post and special postage rates shall not in any wise affect the mailing of or postage rate on packages of third and fourth class matter, except within the limitations stated, *And Provided further*, That nothing herein contained shall be taken as authorizing the acceptance or delivery at the special rates of postage herein provided of any parcel offered by any person acting as agent or representative, upon commission or otherwise, for any person or company not resident on such rural delivery route, *And Provided further*, That only such parcels shall be received for delivery at the special rates of postage herein provided as are offered by bona fide merchants or dealers whose regular places of business are on rural delivery routes covered by this act, in the ordinary and regular course of their business, and by residents on such routes in their individual capacity.

Sec. 3. That parcels covered by said special postage rates and deliverable by said rural parcel post under this act shall not exceed eleven pounds in weight, three feet six inches in length, or six feet in length and girth combined, and such parcels shall conform to the Postal Laws

and Regulations concerning mailability, except as they are modified by this act and regulations promulgated in pursuance thereof.

Sec. 4. That perishable articles of food, submitted for mailing under said rural delivery parcel post, shall not be accepted by postmasters or rural delivery carriers more than three hours before the departure of the mail, and then only at the risk of the sender, and the postmaster or rural carrier shall stamp or note on any such parcels the time of acceptance and of transmittal, and the words, "At the sender's risk."

Sec. 5. That the provisions of this act shall apply only to parcels mailed on and addressed to rural delivery routes, as follows:

(1) From the post office or station from which one or more rural delivery routes emanate to any intermediate post office or to any patron on any of said routes emanating from said post office or station, and supplied by rural carrier.

(2) From any intermediate post office on any rural delivery route to the post office or station from which said route emanates or to any intermediate post office or to any patron on that or any other rural route emanating from said post office or station, and supplied by rural carrier.

(3) From any patron on any rural delivery route to the post office or station from which said route emanates, or to any patron or intermediate post office on that or any other rural delivery route emanating from said post office or station, and supplied by rural carrier, *Provided*, That in all cases where, under this act, parcels are mailed at a post office on a rural route which emanates from a station of such post office, such parcels shall be offered for mailing at such station; and in all cases where parcels mailed under this act are addressed to a post office on a rural route terminating at a station of such post office, such parcels shall be delivered to addressees at such station, and in the latter case addressees shall call or send for such parcels.

Sec. 6. That the proviso in the act of April 28, 1904, ch. 1759 (33 Stats. 440), relative to the transportation of merchandise by rural carriers for patrons, is hereby repealed.

Sec. 7. That seeds, cuttings, bulbs, roots, scions, and plants when mailed under this act, shall be chargeable with the postage rates and subject to the limit of weight herein provided.

Sec. 8. That all provisions of law applicable to the third and fourth classes of mail matter, and all provisions of law applicable generally to mail matter, and not inconsistent with the provisions of this act, are hereby extended and made applicable to matter of like character mailable under this act, *Provided*, That matter so mailable shall be subject to the rates of postage and the limitation of weight herein provided.

TWO MORE PARCEL POST PROPOSITIONS.

FROM OUR SPECIAL CORRESPONDENT.

WASHINGTON, D. C., February 11, 1908.

THE most extraordinary propositions yet brought forward by the so-called postal reformers have just been presented in the House by Representative Henry of Connecticut, the author of the original parcel post bill. In view of the preposterous character of these measures it is not surprising that Mr. Henry should disclaim their authorship, which he does by indorsing them "By request;" but the fact that he is willing to present them is evidence that he sympathizes with the principle which underlies them and under the rules of "Congressional courtesy" precludes him from any attempt to discredit them.

A Sweeping Proposition.

The first of these bills involves the sweeping proposition that all existing rates of postage, with the exception of that applying to newspapers, periodicals, &c., when issued by their publishers, shall be wiped out and that a flat rate of 1 cent. for each 2 oz., or 8 cents per pound, shall be substituted. This will include letters, postal cards, printed matter of all sorts and every kind of merchandise. The text of the bill is as follows:

Be it enacted, &c., That the first, second and fourth classes of mail matter be, and are hereby, consolidated with a rate of 1 cent for each 2 oz. or fraction thereof.

Sec. 2. This act shall take effect on the approval thereof.

It is doubtful if the author or the introducer of this measure has given any consideration to its practical effect upon the revenues. In the consolidation of third and fourth class matter alone it would cost the Government several millions annually, while the cut in letter postage from 2 cents per ounce to 1 cent for 2 oz. would cause a loss of not less than $50,000,000, to put it at a very conservative figure. The advocates of penny postage have never gone beyond proposing a rate of 1 cent per ounce, while the more conservative promoters of this project have suggested a rate of 1 cent per ½ oz., which would include the average business or personal letter and would cause but a small reduction in the total revenues because of the extent to which the use of the mails would be stimulated by the reduced rate. It is hardly necessary to say that this bill will not receive serious consideration at the hands of the Post Office Committee.

Another Absurdity.

Mr. Henry's second measure is absolutely unique in form, if not in principle. It is intended as a substitute for the pending bills providing a rural parcel post. The text is as follows:

Be it enacted, &c., That mail matter of all kinds shall be transported, house to house and between the houses and the post office or post offices, on each of the different rural routes of the United States on the following conditions:

Parcels up to the dimensions of one-eighth the ordinary suit-case, 3 x 6 x 12 in., or similar cubic contents, 1 cent.

Larger parcels, up to one-half the ordinary suit-case, 6 x 12 x 12 in., 5 cents.

Larger parcels up to a full suit-case, 6 x 12 x 24 in., or to the dimensions of a peach basket, 10 cents.

No parcel shall be over 25 lb. in weight or over 6 ft. in length.

No carrier shall be obliged to carry a load of ove. 800 lb.

Sec. 2. This act shall go into effect July 1, 1908.

This bill, which appears to be designed to catch the vote of the traveling men and fruit growers, judging by the standards upon which it is based, entirely ignores the weight limit of parcels, except that a maximum of 25 lb. is prescribed. Notwithstanding the absurd features of this measure, it is a fair exponent of the principle upon which the rural route bills are based—namely, the loading down of the carriers with merchandise which neither the Government nor any private concern could afford to handle at the rates proposed. Assuming that a rural carrier in his daily round could secure the maximum load of 800 lb., its distribution over a 25-mile route would produce a revenue of only $3.20.

The Appropriation Bill.

The House Post Office Committee has concluded the hearings on the annual post office appropriation bill and has completed a preliminary schedule of the allotments for the coming fiscal year. The total appropriations carried by the bill will exceed by about $8,000,000 the cost of the service during the current year. Assuming, however, that no important changes are made in the existing postal regulations, the revenues of the service may be counted upon to show a proportionate growth, and there appears to be no danger of any material increase in the annual deficit. Thus far the committee has given no consideration to the pending parcel post measures, but they will be taken up when the review of the recently concluded hearings is begun. The Postmaster-General and the First Assistant advocated the reduction from 16 to 12 cents in the general merchandise rate, a cheap parcel post as outlined in the Sims bill, and a post check currency system as provided for in the bill drafted by the special commission of the Post Office Department having the matter in charge.

Postal Commission's Preliminary Report.

The Joint Congressional Postal Commission, which for nearly a year has been engaged upon an investigation of the business methods of the Post Office Department, has presented a preliminary report to Congress. The commission suggests a number of sweeping reforms, including the abolition of the offices of the four assistant postmasters-general and the appointment in their stead of a single executive officer under the protection of the civil service, who shall manage the postal affairs of the country under the general direction of the Postmaster-General. The commission also recommends that the postal service be geographically divided into several grand divisions, with a headquarters in each, with a view to the economical handling of supplies and to the more expeditious transaction of the public business. The commission will file a final report in the course of the next 60 days.

A WASHINGTON'S BIRTHDAY SALE.

A Practical Suggestion from a Retail Merchant in Regard to the Stimulation of Trade During Washington's Birthday Week.

THE following communication has been received from a Hardware merchant, and its suggestion for the possible increase of trade during one of the usually dull weeks of February should be welcomed by other men in the business:

To the Editor: Your frequent reference in recent issues to special sales and special efforts within the store to increase local interest, bringing more trade, has suggested to me a plan which I believe from past experience in a limited way may prove effective during the week of Washington's Birthday, and I give it to you herewith for what it is worth. If you regard it as worthy I should be glad to see it published in the columns of *The Iron Age* for the benefit of other merchants.

A Progressive Butcher's Idea.

Some 10 or 12 years ago there was in our town a butcher who appealed to the best trade of the neighborhood and who made every possible effort to maintain the highest standard in his line of business, even going so far as to employ delivery schemes, one of which was to deliver his meats in individual agateware pans, which were cleaned after each delivery, and which did away with the use of the customary brown wrapping paper.

His Washington's Birthday Plan.

One year the idea occurred to him that it might attract much attention and comment if he were to decorate his shop in a special way on the occasion of Washington's Birthday. No sooner had he thought of the plan than he set about to put it into operation, and the result was so satisfactory that he repeated it on each successive Washington's Birthday for a number of years.

It was nothing more nor less than an arrangement of whole hogs, halves of beef, legs of lamb, strings of sausages, open kits of lard and whatever else might have been a part of his trade, all climaxed with a decoration consisting of large pictures of Washington, with garlands, wreathes and rosettes of colored paper, real and artificial flowers pinned upon the meat and draped profusely about the shop. As his shop was finished in marble, mirrors and plate glass, it was one of the show shops of the town, and this little additional effort always brought out the town folk as well as the people from surrounding territory.

Legs of Lamb versus Hardware Articles.

If such unattractive and prosaic things as legs of lamb and halves of beef can be so arranged as to attract attention and comment and bring new faces into the store, as well as bring old ones back, why then cannot the more varied line handled by the Hardware merchant be manipulated even to better advantage?

The Hardware merchant has at his disposal one of the chief articles used in a scheme for Washington's Birthday decoration, namely, Hatchets. He can make an effective window background by the use of different kinds of Axes and Hatchets. Such a display can in some instances be carried through the entire main aisle of the store, with occasional pictures of "The Father of His Country."

Advertising he Event.

Advertisements for the event should carry out the same spirit. A border of Hatchets can be obtained from most any engraver, or a small cut of a Hatchet can be used as a corner piece for each of the advertisements. As this holiday for 1908 falls on Saturday, the special event can be arranged either to begin or end on that date, and can be continued successfully throughout an entire week. The announcements in the papers should be bold, and should always carry, together with the paragraphs concerning the special event, as many items of a special nature as the merchant feels that he can afford to put forward.

Souvenir Suggestions.

Hatchet pins made of inexpensive metal and enameled can be obtained at a very nominal price if the merchant sees fit to give away a souvenir as an additional attraction. Some stores use for this purpose the cardboard Hatchets, such as will be found in many candy stores. If the event is carefully planned, well executed and thoroughly advertised it is almost certain to prove profitable to the merchant, and will be looked forward to from year to year by the public in his locality.

Last Year's Experience.

We tried it last year in our store in a small way by employing a special window display, such as I have suggested, and an arrangement of merchandise ticketed at special prices for that week only.

The results were so gratifying that for this year we have planned the event upon a very general scale, and will carry the scheme of decoration throughout the entire main floor of the store. We may arrange to give out souvenirs to all persons who visit the store during this week. If the souvenirs are used we will probably not confine them to persons making purchases, but will give them out without any restriction.

Cherry Tree Window Display.

We have procured two small wild cherry trees which we shall use in the foreground of the window, showing one standing and one lying down as though it had just been chopped down. For the floor of the window we shall use green tissue paper, folded and sheared to give the effect of grass. We have procured a quantity of artificial white flowers and a few artificial green leaves which will be tied upon both trees. These we obtained from a local milliner who loaned them to us in return for the courtesy of placing a card to the effect that the floral part of the decoration was furnished by him, in a prominent place in the display.

Colonial Hardware.

We expect that this feature, combined with a well arranged merchandise display, will attract far more attention than our more modest display made for the same event last year. Of course we shall use display cards explaining the idea, and we expect further to combine with the modern merchandise some rare pieces of old Colonial Hardware which have been loaned to us for exhibition on this occasion.

We are coming more and more to believe firmly in the effectiveness of such efforts as this, and the activity of Hardware merchants in this direction we feel certain will soon rival that of any other line of business.

WESTERN NEW YORK.

ARCHER, COMBS & WINTERS COMPANY is the name of a new corporation at Portland, Ore., which will job Automobile Accessories, Fishing Tackle and Sporting Goods. The members of this firm have a wide acquaintance with the trade in Oregon, Washington and Idaho, having been connected with similar lines in a wholesale way for a number of years. They control a number of lines for the above mentioned territory as manufacturers' agents.

THE JOHN B. VARICK COMPANY, Manchester, N. H., has secured the order for the $6000 silver service to be presented by the State of New Hampshire to its namesake battleship. The fact is of interest in connection with the well defined tendency among Hardware merchants to give attention to fancy ware and art metal goods.

P. T. COFFIELD & SON, manufacturers of the Coffield Power Washing Machine, have moved their office and showroom from 602 Fifth avenue to 415 Sixth avenue, Pittsburgh, where they have secured larger quarters, which will allow them to carry a full line of their Washing Machines and show them to good advantage.

South Dakota Retail Hardware Association.

THE third annual convention of the South Dakota Retail Hardware Association was held in Aberdeen, February 4, 5 and 6. The mornings were given over to the exhibitors in the auditorium and the sessions were held in the afternoons. The attendance at the convention was quite large and great interest was manifested by the members. The National Association was represented by Vice-President A. T. Stebbins, Rochester, Minn., who delivered an interesting address on Wednesday.

Aberdeen, the convention city, proved itself a most hospitable host. On Thursday evening the Commercial Club handsomely entertained the members at their club rooms.

Captain J. H. Hauser, on behalf of the mayor, welcomed the members to Aberdeen, A. W. Barber, Mitchell, responding on behalf of the association.

Address of President Hawkins.

E. D. Hawkins, Vermillion, president of the association, announced that it had been decided to eliminate the annual presidential address, as the secretary's report, giving as it did a full review of the work during the year, seemed to make any formal address from the president unnecessary. Mr. Hawkins, however, addressed the convention as follows, in part:

F. L. PIXLEY.

E. D. HAWKINS.

B. G. WATTSON.

W. J. PILKINGTON.

There has come about in the last few years a great change in the *personnel* of the Hardware business. A Hardware dealer can no longer buy goods carelessly, throw them on his shelves in a careless way and wait on his customers in a careless way and succeed. The man who desires to succeed in the Hardware business must be a man that looks carefully into the details of the business. He must be careful in buying, careful in selling, careful in the arrangement of his store, careful in advertising and careful in everything. Now the thing that has brought this about is probably what we have been counting on as one of our great competitors, or, putting it stronger, one of the great enemies to our business. We must admit that this in a large measure has compelled the Hardware dealer of to-day to do his business on business principles.

The Hardware dealer of to-day is a man who attends conventions. He is a man who reads trade papers. And right here I want to take the liberty to say that there is no other influence to-day that is doing as much good as the trade papers. For instance, our own Hardware paper here in the State, the *Hardware Trade* of Minneapolis, *The Iron Age* and various others. All of these papers will do much toward the improvement of our business if we as retailers will read them through and study them.

Advertising the Great Need.

It seems to me that the great need of the Hardware merchant to-day is advertising, and he must do it in many ways. He must be courteous. He should be courteous to the man of whom he buys his goods, to his customers, to his clerks, and he must be ready and willing at all times to adjust difficulties that may arise to the mutual satisfaction of all concerned, all of which is very essential in the improvement of his business.

Confidence.

One thing a Hardware dealer should have above all, and that is confidence, and if he has confidence in his business he must have confidence in the times; he must not be a pessimist, but an optimist. He must believe that times are going to be better instead of worse. I believe that instead of talking against the times, the Hardware man of to-day feels and talks to his customers that things are on the upward climb; the worst is past and that we will have a prosperous year coming.

Exchange System.

I would like to see an exchange system if it can be done, and I believe it can be. For instance, a dealer had an overstock of goods in certain lines. By simply notifying the secretary, the secretary could probably find some one of our members who would want those goods. I would advocate this for the reason that when a man is overstocked there are chances that he will cut the price in order to reduce his stock. I believe this exchange system could be worked to advantage.

Secretary-Treasurer's Report.

The report of J. E. Johnson, Redfield, secretary-treasurer, was in part as follows:

When I assumed the office of secretary at Mitchell last year, immediately upon my return home I laid plans for a campaign for new members, and this campaign was kept up until the middle of June. To carry this work to a successful issue I enlisted in our cause the Hardware salesmen of the State, knowing that they could do more by personal talks with the dealers than any amount of correspondence sent out from my office, as they were on the ground all the time. Several of these gentlemen rendered most excellent service, for which I am duly thankful.

At the close of this campaign our books showed 34 new members for our association. I had hoped to reach the 50 mark, but had to content myself with the above number. During the time this campaign for new members was carried on I had in hand the publication of the *Official Gazette*, copy of which you have all received. Considerable delay was encountered in getting out this book, as it was our maiden effort in a work of this character, and much of this can be avoided this year, as I have profited by experience. Most of this delay, however, was beyond the power of either myself or the publisher of the book to prevent.

Meeting at Minneapolis.

On September 4 your president and secretary attended a joint meeting in Minneapolis with the jobbers of the Northwest. Representatives from Wisconsin, Iowa, Minnesota and North and South Dakota retail Hardware associations were present, and several subjects of importance to Hardware dealers of these States were up for discussion. The indiscriminate selling of Hardware by the jobbers to all classes of trade in towns where there are good stocks of Hardware was pointed out to them as working an injustice on the Hardware dealer, and a very satisfactory agreement was reached with the jobbers present so that this class of selling would be reduced to a minimum.

An extremely heavy volume of correspondence has been handled by the secretary's office the past year, as you will note by the amount of postage bills. Hardly a day passed but what several letters were received from various parts of the country asking for information concerning our association, our members and the work we are doing. This class of correspondence took a great deal of time, but will bear fruit in the future.

Complaints.

I have received but few complaints from the dealers over the State, even in reply to my letters of August 8,

which asked for complaints along a certain line. This condition is most gratifying, not only to the dealer, but to the manufacturer and jobber as well.

Mutual Insurance.

I have received letters from a number of the dealers at various times, asking about Hardware insurance and where to place their policies. With our sister associations giving their members insurance for 50 cents on a dollar, the time is not far distant when this subject should receive the serious consideration of this association.

Convention Dates.

Early in the fall I entered into correspondence with the secretaries of the Minnesota, Iowa, Nebraska and North Dakota Hardware associations regarding the forming of a convention and exhibit circuit and a satisfactory schedule of dates was arranged, and our date was approved by your Executive Committee at its meeting at Mitchell in August. This circuit was formed with the view of doing away with conflicting convention dates in adjoining States, and it is unfortunate for us that Wisconsin set their date the same as ours, as several exhibitors who had reserved space at Milwaukee wanted to come to our convention, but were unable to do so. It is hoped that this conflict can be avoided another year.

Over 100 New Stocks in South Dakota.

The past year has shown a wonderful increase in the number of Hardware stores in the State. Over 100 new stocks have been put in, and it has been with a good deal of difficulty that I have kept my mailing list up to date.

Financial Statement.

The receipts for the year were $740 and the disbursements $713.10, making a balance of $26.90, and with $278.44 in the hands of the treasurer at the close of the last convention, there is now $305.34 on hand and all accounts paid.

Prof. E. F. Ladd's Address.

Prof. E. F. Ladd of Fargo, N. D., made an elaborate address on "Pure Paints and Paint Laws," in which he touched on the kinds of pigments used in Paints, mail order house Paints, the North Dakota Paint law, the desirability of national Paint legislation, and the Paint tests which are being conducted at the North Dakota Experiment Station. Professor Ladd believed that a national law should be enacted at this session of Congress. He said that a bill of this sort, if passed by the National Legislature, while it might not be as strong as the North Dakota law, would go far toward controlling the sale of Paints and making them what the manufacturers represented them to be. It would offer protection to the retailers against the sale of catalogue house Paints and would tend to drive that class of Paints out of the market.

Convention Committees.

The president appointed the following committees:

NOMINATIONS: Dean Gross, Yankton; H. K. Odell, Montrose; T. A. Stensland, Beresford; L. J. Eneboe, Woonsocket; F. I. Pixley, Montrose; Geo. H. Small, Ashton; J. W. Chase, Parker.

RESOLUTIONS: E. R. Gregory, Alexandria; W. A. Barber, Mitchell; J. L. Jarvis, Brookings; O. K. Berg, Lily; O. P. Anderson, Coleton; H. W. Loomis, Athel; C. A. McArthur, Aberdeen.

A. T. Stebbins' Address.

A. T. Stebbins, Rochester, Minn., vice-president of the National Retail Hardware Association, extended greetings from the national body and congratulated the South Dakota organization on the success they had attained during the past year. He spoke at some length on the importance of organization. He said that merchants were just beginning to realize the necessity of organizing that they might combat their worst enemies, the mail order houses, and eliminate to a certain extent, at least, a competition which might eventually ruin their business. He said that while they did not expect to eliminate the catalogue houses, they could restrain them from misrepresentation.

Mr. Stebbins also referred to the parcel post question. He said that if it had not been for the retail Hardware associations the parcel post bill would have been on the statute of the United States Government to-day. He had no doubt but what the parcel post bill would be defeated at the present session of Congress, but he believed that Postmaster-General Meyer would continue his aggressiveness, and the people should therefore be alive to the occasion at all times and watch every move made in that direction.

He also mentioned the subject of good roads. He believed this question was of vital importance to the commercial interests of towns and should be seriously considered. This was one of the most effective ways to reach the farmer and gain his friendship, as the farmer would have less inconvenience in bringing his produce to market and would realize that the merchant, after all, had his interest at heart. In this way the merchant could also head off a great many orders for the catalogue houses.

Retailing of Merchandise a Science.

W. J. Pilkington, Des Moines, Iowa, delivered an address on the subject of "The Retailing of Merchandise a Science." Mr. Pilkington said in part:

Have you ever wondered, have you ever thought, why you are in the retail business? Here are a bunch of merchants. Why are you merchants? How did you come to be a merchant? How did it happen that you preferred to be a merchant rather than a doctor, a preacher, a lawyer, or a mason? Are you a merchant because you are adapted to that business and are you a merchant because you were schooled in it? Or did you just happen to be in the retail business simply because you got a job as a clerk and gradually developed into a merchant, or was it because of looking for a soft snap?

The man who is a professor in a college has educated himself for that line of work. The man who is in any profession has educated himself for that and he has done, at least, thinking to begin with, so as to educate himself for that business. Now, then, if you are not in the retail business because you are adapted to it, because you like it, then why are you in it? I say this to you, that if the retailing of merchandise is not a science it isn't anything. If the business that you spend your life in isn't science it isn't anything.

The Only Way the Retail World

will ever get on the basis it should be is to understand that it has a scientific principle and is a science that will yield to rules and regulations. The time is going to come when a man will be educated to be a retail merchant, and that is what he ought to be. There are underlying principles having to do with the retail business that ought to be studied just the same as any other course in any school.

Is There Any Science in Buying?

Did you ever stop to think and wonder if you are using any rule in buying? What is the first thing that comes up, or should come up, in the buying of goods? Economy; the economic condition of the country. There is a scientific rule that every man who buys a dollar's worth of goods should reckon with. What I mean is this: The condition of the community in which you live, the condition of the whole United States, should be taken into consideration. Do you remember what happened last November? Do you remember the flurry that passed all over the country? Did it have anything to do with the buying? Well, I guess it did, and with selling too.

Now, that is what I mean by the studying of economic conditions in the purchasing of goods. It is your business to know how many bushels of wheat your county raised last year; how many bushels of oats; how many pounds of pork. In other words, what was the income of the people in your county last year? Upon that you must base your buying, or the first thing you'll know you will be overstocked.

Mr. Pilkington went on and pointed out various other scientific principles which formed the basis of retail merchandising. He urged the necessity of learning the art of ad. writing; that advertising without prices, without a little story of the goods advertised, was not worth the paper it was on. The selection of clerks was also an important feature. The character of a man should always be taken into consideration before hiring him as a clerk.

Mutual Fire Insurance.

It was determined at the convention that the Executive Committee should make a thorough investigation of the matter of establishing a mutual fire insurance company under the auspices of the association, the report of the results of their investigation to be presented at the next annual meeting of the association.

Election of Officers.

The following officers were elected to serve during the ensuing year

PRESIDENT, E. J. Gregory, Alexandria.

FIRST VICE-PRESIDENT, F. I. Pixley, Montrose.

SECOND VICE-PRESIDENT, George V. Ayer, Deadwood.

SECRETARY, J. E. Johnson, Redfield.

TREASURER, B. G. Wattson, Chamberlain.

EXECUTIVE COMMITTEE: E. D. Hawkins, Vermillion; W. A. Barber, Mitchell; O. P. Anderson, Colton; J. L. Jarvis, Brookings; B. E. Tibbets, Clark; C. A. McArthur, Aberdeen; D. D. Gross, Yankton.

The following were appointed members of the Legislative Committee: Geo. V. Ayer, Deadwood; F. I. Pixley, Montrose; Fred S. Rowe, Fort Pierre.

The president and secretary were decided upon as delegates to the national convention.

Resolutions.

Among the resolutions adopted by the association were the following:

Whereas, The South Dakota Retail Hardware Association in convention assembled observed the evil effects resulting from the sale of adulterated and nonbranded Paints and Oils and the need for national protection;

Resolved, That we commend the efforts being made to secure sound legislation, and we indorse the Marshall Paint bill now before the National Congress and urge upon our members of the House and Senate to use every honorable means to secure its enactment into a law; and be it further

Resolved, That our secretary be instructed to furnish copies of this resolution to our Congressmen and Senators, also to the Hon. T. F. Marshall, member of Congress.

Whereas, The parcel post is un-American and not applicable in large and sparsely settled countries; be it

Resolved, That we urge vigorous opposition to this law, but would recommend a reduction on first-class postage rate.

Whereas, We believe bill H. R. 13,447, amending Section 549 of the postal laws of the United States is unjust, unfair and against the best interests of our association; be it

Resolved, That our Senators and Representatives be requested to use all honorable means in repealing this law.

Resolved, That we request that as soon as possible the jobbers shall eliminate from their customers all but regular Hardware dealers, and that they will refrain from entering into or maintaining retail Hardware stores.

Resolved, That it is the judgment of this committee that our State and country officials should make a large appropriation for the building of good roads in our State.

Resolved, That we are in favor of the national law prohibiting false advertising and misrepresentation of our respective lines of goods, believing that justice is the foundation of prosperity.

R. E. Saberson of the Berkley System Company, Sioux City, Iowa, spoke at some length on the question of catalogue house competition. Mr. Saberson pointed out how the mail order houses were gradually expanding, and how by the system of advertising furnished by his company their development might be checked.

Invitations were received from the commercial clubs of Yankton and Huron to hold the next convention in their cities. Huron was selected.

The Hardware & Woodenware Mfg. Company Receivership.

BY an order of the United States Circuit Court, in the Southern District of New York, Nicholas H. Colwell has been appointed receiver of the Hardware & Woodenware Mfg. Company, 826-828 Broadway, New York, and applications have been made for the appointment of ancillary receivers in all the States in which the properties of the company are located. The receiver is informed that this action has been taken for the purpose of protecting the interests of the creditors and stockholders pending the adoption of a plan by all parties in interest intended to provide for the payment of the liabilities of the company and the successful continuance of its business. Pursuant to the orders of the United States Circuit Court the business will be continued as nearly as possible as heretofore by the receivers, with no unnecessary changes in its organization or employees or in the methods of its business. Orders may be sent to the receiver, either at the main office of the company, 826-828 Broadway, New York, or to the receiver at the various branch offices of the company, as heretofore. Such orders, we are informed, will receive prompt and satisfactory attention. The 15 constituent companies composing the Hardware & Woodenware Mfg. Company are located in eight States, in only one of which has a co-receiver been appointed with Mr. Colwell. It is Mr. Colwell's purpose to conduct the receivership with as little expense to the stockholders as possible.

Death of Albert M. Graves.

ALBERT M. GRAVES, secretary of Hibbard, Spencer, Bartlett & Co., Chicago, died at French Lick, Ind., on the 2nd inst. Mr. Graves was born at Sunderland, Mass., in 1848. He came to Chicago at an early age and engaged to work for Field, Palmer & Leiter, but did not long continue in the dry goods line. On August 10, 1867, he began work for Hibbard & Spencer as an invoice clerk. After two or three years' work in the house he was sent out on the road to represent the firm in Wisconsin and northern Michigan. Successful from the start, he rapidly increased the business from the territory which he covered. At that time only two men were traveling for Hibbard & Spencer—A. D. Lamb and Mr. Graves—but the

ALBERT M. GRAVES.

number was steadily increased until Mr. Graves was called into the house to assist in the direction of this force, which he continued to do until the day of his death. He was intensely interested in the young men employed by the house, particularly those who aspired to become salesmen, and was ever ready to help them along in every possible way. Mr. Graves was one of the hardest of workers, and being methodical and orderly he accomplished things. Painstaking, tactful and persevering in whatever capacity he served, his work was always characterized by thoroughness. So devoted to his business was he that much of the time that most men give to sport and recreation he employed in the advancement of the firm's and his own interest.

Genial in manner, he had a pleasant word for every one and was ever ready to respond to the needs of those less fortunate than himself. Of boundless energy and recognized ability, he rapidly advanced in the company's favor and was finally made secretary. Mr. Graves' devotion to his family, his friends, his church and to his business interests were well known, and in his death the company has lost one who had been in its service for over 40 years and who had always worked energetically, loyally and capably for its best interests.

The Hardware, Stove, Tin and Paint store of M. J. Gallagher, Wheaton, Kan., has been destroyed by fire.

Wisconsin Retail Hardware Association.

AN attendance gratifying in numbers and enthusiasm, coupled with encouraging reports of growth and progress, combined to make the twelfth annual convention of the Wisconsin Retail Hardware Association, held in Milwaukee, February 5-7, one of notable interest. Signally favored by a succession of able executive officers and fortunate in the uninterrupted service of a well qualified and energetic secretary, whose tenure of office dates from the beginning of the organization, the Wisconsin body has won and still retains a position of commanding importance among the foremost retail Hardware associations. Some years, it is true, have shown more rapid advancement than others, but at all times the movement has been one of unfaltering progress. Accessions to its membership during the past year were somewhat less than in the year previous, the number for the latter period being 43, but after deducting losses by death, which it is to be regretted were the largest in the history of the organization, and lapses through retirement from business, there is still left a safe margin of gain. From an original membership of 40, 25 of which are still actively connected with the organization, the number has grown so that this year the association has enrolled upon its roster 645 names of members in good standing.

JAMES MURPHY,
President.

Following a generally favored precedent established at the last convention business sessions were held only in the forenoon, leaving the members free in the afternoon to visit the exhibits of merchants and manufacturers, which were displayed in two spacious halls of the Public Service Building, on the upper floor of which the convention hall was located. The popular interest manifested in this feature of the convention by both delegates and exhibitors was attested by the crowds that filled the halls from the opening to the closing hour, and by the fact that practically all the available space provided by the association was engaged and occupied. Included in the well arranged programme provided for the convention were a number of addresses and business talks upon topics of pertinent interest, which commanded marked attention and evoked lively discussion; moreover, there were not lacking those contributions in a lighter vein, which added zest to the proceedings.

President Kornely's Address.

Succeeding the call to order of the opening session by President J. Kornely on Wednesday morning the convention joined in singing "America," after which Richard B. Watrous, secretary of the Citizens' Business League, delivered a brief, but hearty message of welcome in behalf of that organization and the citizens of Milwaukee. This was supplemented by similar sentiments voiced by Louis Weiss, president Milwaukee Retail Hardware Association, who extended an invitation to the delegates to attend a theater party at the Davidson in the evening as guests of the local association. Having acknowledged these courtesies by fitting responses President Kornely delivered his annual address, the keynote of which was unceasing vigilance in guarding against the establishment of rules and practices inimical to the Hardware trade. The Hardware trade journals were commended for their serviceable and efficient efforts in behalf of association work, and the membership was recommended to acknowledge their beneficial influence by a liberal support. Among the experiences of the year which were referred to as pointing the need of alert activity were the passage of the Binder Twine bill and the defeat of a bill prohibiting gas companies from selling Gas Stoves to consumers, by the Wisconsin Legislature, the action in both cases having been the result of efforts made by the Retail Hardware and many other associations. Attention was directed to certain defects in transportation facilities that apparently contribute to needless delay of shipments, and suitable action directed toward the elimination of such difficulties was suggested.

Secretary's Report.

In presenting his twelfth annual report Secretary-Treasurer C. A. Peck, while noting some diminution in the ratio of new members received since the last report, declared that, as an effective force for the promotion of its aims and purposes, the association was stronger to-day than at any period in its history. This was ascribed to the fact that more of the members had become actively engaged in furthering the interests of the organization within the past 12 months than in any previous year of its existence. Following a suggestion for the appointment of a committee to draft suitable resolutions in memory of the six members claimed by death since the last meeting, other features of interest were taken up in the report, which continued as follows:

I would also recommend that you take some action in regard to empowering our Committee on Legislation to act, and make some provision for paying them for services rendered, wherever necessary. We have not paid as much attention to that feature of our work in the past as we might profitably have done.

We have taken in since our last meeting adjourned 43 members, and at the last meeting 37 were added to our rolls, although some of these were successors to previous members. We have to-day 645 on the rolls who have paid their dues up to date.

I sent out some 700 notices in regard to protesting against the use of freight cars for billboards, and with the combined efforts of the different State associations we were successful in having the evil cured, so that to-day you see no freight cars passing your station so labeled. During the fall I sent out about 2000 letters and appeals in regard to parcel post legislation, and from reports received, several of which are on file in our office, I think the powers that be thought the Hardware deal-

HENRY F. KRUEGER,
Vice-president.

C. A. PECK,
Secretary.

ers were not dying to have any legislation along that line.

Our financial exhibit shows that since the last meeting we have received for dues $1262, plus $28.30 received for interest, and $2886.28 of surplus on hand, making a total of $4367.33, which includes $190.75 received on account of programmes. To the present assets on hand of $2865.43 there will be added one-half of the net proceeds of our exhibition feature, the amount of which at this writing is unknown.

Convention Committees.

Announcement of the following committees appointed to serve during the convention was made by President Kornely:

AUDITING: James Montgomery, Wausau; F. Rossman, Beaver Dam; B. W. Walter, South Milwaukee.

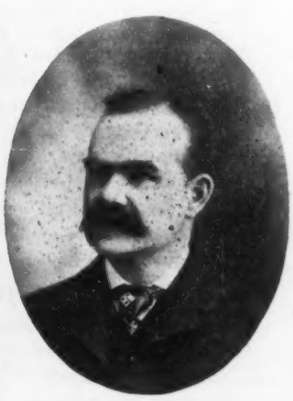
LEGISLATION: L. M. Nash, Grand Rapids; Mr. Blied; A. C. Fuge, West Bend; D. & P. Kusel, Watertown.
SUGGESTION: William Noll, Marshfield; Mr. Kosanke, Weyauwega; C. A. Gorder, Waukesha.
PRESS: J. W. Jones, Racine; C. B. Wagner, Burlington; Fred Herrinbruck, Milwaukee.
QUESTION BOX: H. L. McNamara, Janesville; John Hessel, Antigo; C. A. Dewey, Kenosha.
GRIEVANCES: L. B. Wensink, Plymouth; Louis Weiss, Milwaukee; J. J. Hauert, Appleton; Mr. Killer, Sheboygan; A. H. Pratt, Baraboo.
RESOLUTIONS: F. J. McPherson, Oshkosh; Mr. Gross, Stevens Point; Mr. Kraus, Port Washington; Simon Fink, Milwaukee; E. Yeitgen, Manitowoc; H. C. Schofield, Sturgeon Bay; Mr. Hanson, Scandinavia.
SERGEANT-AT-ARMS: August Schupinski, Milwaukee.

Mutual Fire Insurance.

Several interesting talks on the benefits of mutual fire insurance were given, in the course of which policy holders were advised to carefully observe the contract conditions upon which their insurance is based. Attention was called to the necessity of protecting the salvage in case of a loss, and the procedure to be followed in filing proofs of loss for adjustment were explained in detail. By way of emphasizing the policy requirements the following pertinent questions were propounded by Secretary Peck:

How many present know that any change of ownership without immediate notice to the company or its agent invalidates a policy; that a mortgage put upon property insured does the same thing; that if they are using a

J. KORNELY.



J. W. JONES.

firepot burning gasoline without a special permit therefor recovery in case of loss is forfeited; that the same result follows the acceptance of other insurance without consent; likewise the use of acetylene lights or the carrying of more than 25 lb. of gunpowder without a special permit; that the insured is required to furnish proofs of loss, which, by the way, it is difficult to do in case annual inventories are not taken and stock account of purchase and sales are not kept; whether policy is written at other than the board rate; or if manufacturing is allowed after 10 o'clock at night; if alterations taking more than 15 days' time are allowed without special permit; if the keeping of fireworks on the premises is prohibited, and that notification of change of title and ownership are invariably required?

Freight Transportation.

Under the topic of "Some Flies in Our Ointment," John M. Callahan, freight agent, Chicago & Northwestern Railway, at Milwaukee, discussed the relations of shipper and carrier in the transportation of freight. Prefacing his address with a couple of narratives, the humor and application of which were keenly enjoyed by the audience, Mr. Callahan, speaking from his experience as a railroad man, told his hearers how the movement of freight might be expedited and much of the annoying delay, commonly incident to the settlement of claims against the railroads for damages and shortage of consignments, might be avoided. Touching these questions he said:

We find that many claims are presented with nothing to substantiate the correctness of the claim. This necessitates the return of the claim to the claimant for further information or evidence, which means a delay in the settlement of the claim. I have to say that, in my opinion, if claimants would furnish the following papers and information, claims could be much more promptly investigated and adjusted:

1. A bill stating the amount of claim, date of shipment, and, if known, the cause of the damage or loss.
2. The bill of the person who made the repairs, if claim is for the cost of repairs to property damaged in transit.
3. A copy of the account sales for property sold, if claim is for property shipped to be sold on commission or otherwise, and upon reaching destination was sold.
4. The original paid freight bill for the charges on the shipment.
5. The original bill of lading for the shipment, if one was issued.
6. The original invoice, or a certified copy of it, if the claim is for the value of merchandise lost or damaged in transit.
7. Attach any correspondence which claimants may have with other parties interested in the shipment, showing where and how the loss or damage occurred and its extent.

The above papers and information should be transmitted to the railroad agent, who will forward the papers to the general claim agent for adjustment. If the shipment came over more than one line, always attach the shipping ticket or bill of lading, as it will enable the delivering line to make settlement promptly; it will not be necessary to forward the papers to connecting line, where the claim is beyond a question of dispute, as it will be paid promptly and then passed on to connecting lines.

Marking of Freight.

Another very important question, which I believe should be brought to your attention, is the proper marking of freight. This question appears to have been lost sight of by many shippers, but I am of the opinion that the subject is of too much importance to be allowed to pass by unnoticed. It is, indeed, of greater concern and importance to railroads and its patrons than has been realized. This subject naturally resolves itself into "what are the rules governing the handling of package freight." They require that each and every piece of less than carload freight must be plainly marked with all the necessary information to transport shipment through to destination, even if separated from the way bill. The rules of all transportation companies are practically uniform on this proposition, yet it has been a difficult matter for us to secure the hearty co-operation of all shippers on this point.

We should work for uniformity in the observance of the rules laid down by the transportation people, and insist that each package of freight must be plainly marked, consignee's name to be written in full, name of city or town, and the State. This would insure its proper delivery, even if the railroad way bill becomes separated from the freight, for if the freight is fully and properly marked it can go forward without billing. If it bears only the initial and reaches its final destination with such marking, the receiving agent may not be able to make delivery or ascertain to whom the freight belongs.

Delays Due to the Improper Marking of Packages

often cause the loss of a good customer. How then can we avoid these unnecessary and vexatious delays? First, it is highly important that all old marks be removed from boxes or packages that you are to send out, and see to it that the stencil or marking pot is used in every instance, writing out the name in full, "John Smith, Milwaukee, Wis." If the shipment is for residence delivery in a large city, always be careful to write in the street and number, as there are nearly always several persons of the same name in the same city. Street and number being shown, delivery will be made to the proper person.

We also receive shipments where tags only are used on barrels and boxes. I would urge you to discontinue this practice for the reason that in placing one box on top of another the tag may be torn off and by the time it reaches the point to which it is destined there may be no tag or address on the box. If the system of marking as suggested is observed the trials and troubles of all concerned will be very materially reduced. Every shipper should so organize the business transacted with the railroad companies as to get the very best results. Many firms have a systematic manner of ordering and loading cars, keeping a car record as carefully as their bank account, while others leave the placing of cars at their industries in the hands of switchmen, and, as a result, they do not get the service which they expect and have not requested in proper form.

As to Recent National Laws Enacted,

it seems to me that very likely railroad companies will in the working out of the problem find that these laws

impose fewer hardships than were generally expected, and also that some of their provisions will be found protective. The demand that all accounts of transportation companies shall be uniformly kept, subject to examination by representatives of the Federal Government will be regarded as a protection and a benefit, rather than a matter of complaint. This will give the public a statement which will show a road to be in good condition with an attractive balance of earnings, if it is actually in that condition. The investor will be in position to know the truth, and can say the statement is correct; it has been audited and proved by the Federal Government's authorized representative. No railroad should, it appears to me, object to this kind of regulation.

Paper on Trade Getting.

Since the commerce of the world is carried on chiefly for the pecuniary profit to be gained thereby, the success achieved in any other line of business depends to a large extent on "Trade Getting." Consideration of the methods best calculated to accomplish this result with a proper regard for the rights of others engaged in a like pursuit formed the theme of a thoughtful address delivered by J. W. Jones, Racine, Wis. Some of the suggestions offered by the speaker are embodied in the following extract from his paper:

One of the most important factors in trade getting is to gain the confidence of the people in your community, which you can positively do by honest dealing and you can retain it as well by following the same practice. Well arranged and cleanly kept show windows, changed at least twice a month, with prices marked in plain figures, create a good impression with the people that travel by your place of business. The same policy should be adhered to all through the store; the better you display your goods the more you will sell and trade getting becomes a simple matter.

Have one price on the same article for all, discriminating only in quantities. Special sales for cash only, at different times, honestly conducted, is another good medium for getting new trade, but great care should be exercised in offering the best article possible for the money involved.

Render your bills and statements monthly to all credit customers, so that they may know at all times to what extent they are obligated to you, and you will find it to be one of the best trade getting mediums you can exercise, as well as profitable to yourselves.

By following these suggestions closely you will find that your business will increase and that trade getting is practically solved. And, finally, it never gets you any trade to criticise your competitors. At this day and age we have all we can do to attend to our own business. Remember it is your goods as well as yourself that you want to advertise and not your competitor.

Business Methods in the Store.

In a well considered and practical paper on "Business Methods," H. F. Krueger, Neenah, Wis., outlined methods for the conduct of a retail Hardware business, which in his own experience have been productive of good results in expediting transactions, minimizing errors and checking wasteful loss. A thorough knowledge of the quality and uses of each article handled was emphasized and an organized system of instruction for clerks and salesmen was recommended. Illustrating his method of handling orders and accounts, a complete set of blanks, marking cards and tags of various sorts and sizes were exhibited and the use of each explained. Many of the members availed themselves of the opportunity offered to examine these blanks, which in the light of explanation given regarding their use and adaptability to the average retail Hardware business were studied with much interest.

Resolutions.

Among the resolutions adopted were the following:

Resolved, That it is the sense of this convention that we discourage in every way we can the giving away of premiums of standard articles with soap, baking powder, &c., and that we appeal to the manufacturers for their hearty co-operation.

Resolved, That the president of this association appoint at an early date a strong legislative committee to look after matters affecting our interests, this committee to be reimbursed for actual expenses incurred.

Resolved, That this association is opposed to the adoption of House bill No. 13,477, relating to post offices and post roads. (This proposed legislation referred to lists of persons receiving mail at post offices upon payment of expenses of copying same.)

Resolved, That we favor the proposed bill introduced by the National Advertisers' Association regarding fraudulent advertising.

Resolved, That this association disapprove the action of the Greater Milwaukee Association in recommending the passage of parcel post bill.

Resolved, That the secretary of this association present at each annual convention a list of those who have retired from the Hardware business, so that desirable ones may be elected honorary members of this association.

CURRENCY LEGISLATION.

Whereas, The President of the United States in his message to the Sixtieth Congress urged the need of immediate action by Congress in the matter of currency legislation; and

Whereas, We believe that the President is right in his opinion that there is need for some immediate action by Congress in the matter of legislation to relieve the present financial stringency, as well as to restore confidence and to prevent if possible the recurrence of such strained conditions in business as now exists; and

Whereas, It is the opinion of our best and most conservative business men that such action is necessary for the permanent prosperity of the West; therefore, be it

Resolved, That our representatives in Congress and United States Senators are hereby urged to take prompt action with a view to having enacted as soon as possible such financial legislation as may be most expedient to remedy the present financial stringency, and to prevent, if possible, the recurrence of such business conditions as have been in existence during the past 90 days, and to restore as quickly as possible the confidence of the people in our great and prosperous country.

Election of Officers.

The following officers were elected for the ensuing year:

PRESIDENT, James Murphy, Racine.
VICE-PRESIDENT, Henry F. Krueger, Neenah.
SECRETARY-TREASURER, C. A. Peck, Berlin.

Charles Pflugradt, Milwaukee, and I. B. Wensink, Plymouth, were chosen members of the Executive Committee to succeed E. M. Ramm and A. H. Kleberg.

The following delegates to the national convention at St. Louis were selected: President James Murphy, Vice-President Henry F. Krueger, Secretary-Treasurer C. A. Peck, R. R. Murdock, Beloit; Emil Teitgen, Manitowoc; H. C. Scofield, Sturgeon Bay; John Hessel, Antigo.

National Officers Present.

Among the distinguished guests of the convention were several officers of the National Retail Hardware Association and others prominently connected with and interested in the work of the association. Of the former there were present M. L. Corey, secretary, Charles H. Williams, second vice-president, and H. L. McNamara, treasurer; included among the latter were L. Lindenberg, representing the Mutual Fire Insurance Company of the Iowa Association; W. H. Bennett, Chicago, and R. R. Williams of *The Iron Age*, all of whom made brief addresses at one of the sessions.

Entertainment.

Arrangements for the entertainment of members and guests of the convention were, as in former years, liberally planned and happily carried out by those having them in charge. Besides the courtesies individually extended by the retail, jobbing and manufacturing interests connected with the Hardware trade, through which many of those in attendance were afforded an opportunity of visiting points of interest, the convention was collectively entertained on Wednesday evening by a theater party given by the local retail association, and on Thursday evening in a similar manner by the jobbers and manufacturers of Milwaukee. Over 750 persons were present on each occasion, and their appreciation of the entertainment offered was freely demonstrated.

Manufacturers and Jobbers Present.

A-B POLISH COMPANY, Chicago: Polishes. Represented by G. L. Burlingame and A. P. Christena.

ADRIAN WIRE FENCE COMPANY, Adrian, Mich.: Wire Fence. Represented by John Westrick.

ÆTNA POWDER COMPANY, Chicago: Powder and Dynamite. Represented by George A. Allen and W. J. Austin.

AMERICAN POWDER MILLS, Boston, Mass., and Chicago: "Dead Shot" Smokeless Powder. Represented by R. R. Barber and R. W. Clancy.

AMERICAN STEEL & WIRE COMPANY, Chicago: Woven Wire Fence. Represented by E. J. Smith, Grant Phillips, L. Harter and J. W. Meaker.

AUTOMATIC DAMPER COMPANY, Milwaukee, Wis.: Automatic Specialties and Star Ball Bearing Pulleys. Represented by A. B. Ferdinand.

BANY & HADLEY MFG. COMPANY, Delphos, Ohio: "Bany" Washing Machines. Represented by B. F. Hadley.

BRAND STOVE COMPANY, Milwaukee, Wis.: Stoves, Ranges and Furnaces. Represented by Matt J. Franey and William T. Griffith.

BENDER MFG. COMPANY, Milwaukee, Wis.: Household Specialties. Represented by C. J. Robertson.

CARBORUNDUM COMPANY, Niagara Falls, N. Y.: Sharpening Stones and Knife Stones. Represented by B. L. Cohen, George N. Allen and W. R. Embleton.

CHICAGO VARNISH COMPANY, Chicago: Paints and Varnishes. Represented by F. P. Budinger, W. M. Dressler and Henry B. Cowap.

CLAUS AUTOMATIC GAS COCK COMPANY, Milwaukee, Wis.: Gas Stove Cocks and Valves. Represented by E. L. Claus.

CONSOLIDATED SHEET METAL WORKS, Milwaukee, Wis.: Fireproof Windows and Doors, Skylights, Cornices, &c. Represented by Fred Bogenberger, Jr.

CREAM CITY ROOFING & PAINT MFG. COMPANY, Milwaukee, Wis.: King Brand Roofings and Paints. Represented by F. M. Johnson, C. A. Minton and F. M. Perkins.

DAIN MFG. COMPANY, Ottumwa, Iowa: Hay Machinery. Represented by F. M. Gardner.

DE LAVAL SEPARATOR COMPANY, Chicago: Cream Separators. Represented by H. S. McMariners and B. J. Evans.

ENNO DORESTAN & SON COMPANY, Milwaukee, Wis.: Mixed Paints. Represented by J. Hppert.

DOVER MFG. COMPANY, Canal Dover, Ohio: Asbestos Sad Irons. Represented by W. D. Anderson.

ENGINEERING & SUPPLY COMPANY, Milwaukee: Farming Implements. Represented by C. H. Barker and Fred W. Mahneke.

FERDINAND DIECKMANN COMPANY, Cincinnati and Brighton, Ohio: One-Piece Conductor Elbows. Represented by Ferdinand Dieckmann, Otto Dieckmann and Edward H. Hoffeld.

FOLLANSBEE BROS. COMPANY, Milwaukee and Pittsburgh: Tin Plate and Sheets, Conductor Pipe, Furnace Pipe, Fittings, &c. Represented by Edwin G. Fisher.

J. B. FORD COMPANY, Wyandotte, Mich.: Dairyman's Cleaner and Cleanser. Represented by E. R. Hansen.

FOSTER-MUNGER COMPANY, Chicago, Ill.: Doors, Blinds and Glazed Sash. Represented by J. J. Eells.

FOX MFG. COMPANY, Milwaukee, Wis.: Metal Shears and Floor Scrapers. Represented by E. M. Clark.

WM. FRANKFURTH HARDWARE COMPANY, Milwaukee, Wis.: Jobber of General Hardware.

FROST, CLARK & CO., Chicago: Water Heaters and Kerosene Incandescent Burners. Represented by A. W. Holmes.

FULLER-WARREN COMPANY, Milwaukee, Wis.: Stewart Stoves and Ranges. Represented by H. S. Crane and Chas. W. Jones.

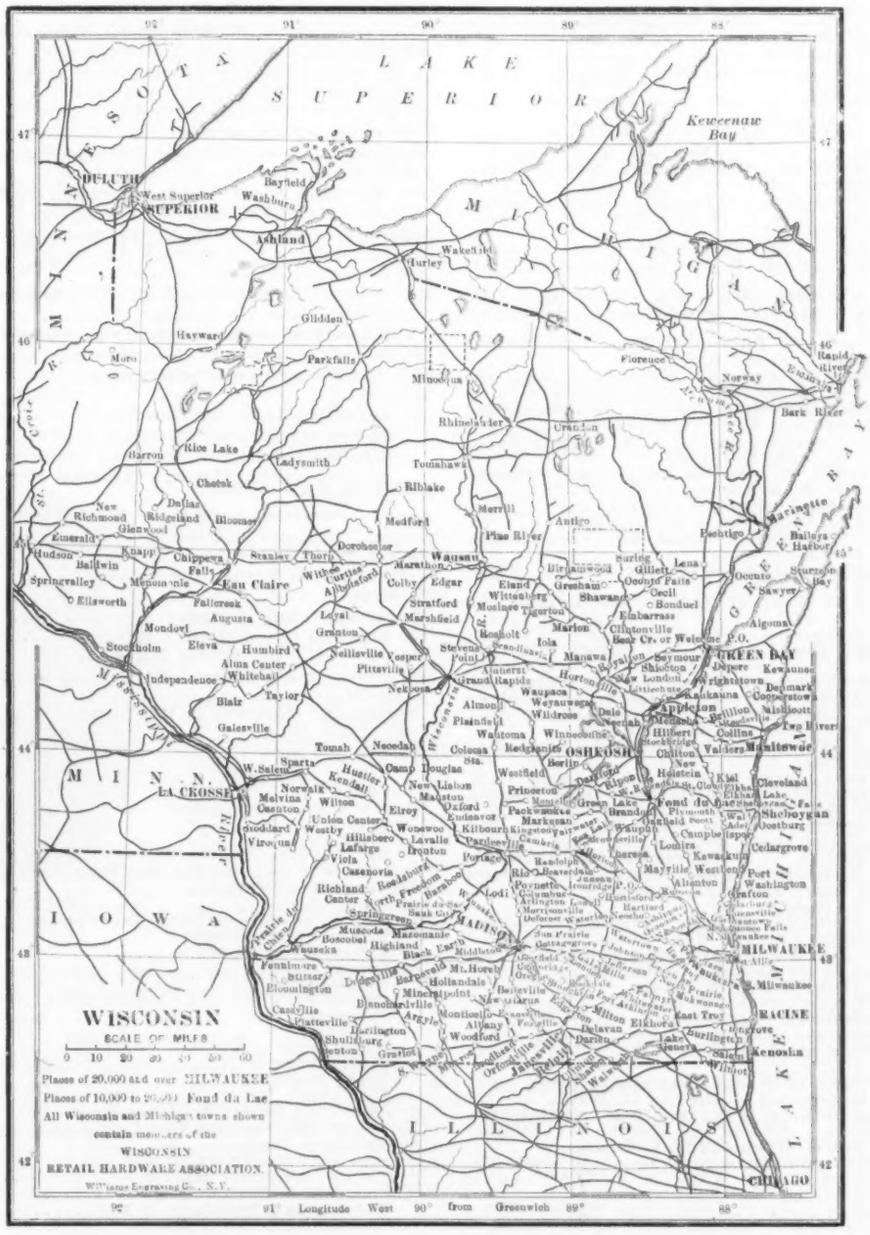
GLASCOCK BROS. MFG. COMPANY, Muncie, Ind.: Baby Jumpers, Baby Walkers, Wood and Steel Hand Cars. Represented by John J. Dow.

GOODYEAR RUBBER COMPANY, Milwaukee: Rubber Hose. Represented by Walter W. Wallis and J. F. Ford.

PHILIP GROSS HARDWARE COMPANY, Milwaukee: Represented by H. M. Gay.

HARPER, SPENCER & JOYS, Milwaukee: Manufacturers' Agents Cutlery, Mica and Hardware Specialties. Represented by H. J. Joy and R. P. Spencer.

HART & COOLEY COMPANY, New Britain, Conn.: Steel Registers. Represented by H. M. Libe.



Hardware Association Map of Wisconsin.

HASTINGS & ANDERSON, Milwaukee: Mossberg Wrenches.

HAWKEYE INCUBATOR COMPANY, Newton, Iowa: "One Minute" Washers. Represented by T. W. C. Anderson.

HECHT & ZUMMACH, Milwaukee: Paints. Represented by Walter Zummach.

JOHNSON & FIELD MFG. COMPANY, Racine, Wis.: Farm and Warehouse Fanning Mills. Represented by J. F. Johnson and W. L. Dutton.

JOHNSON SERVICE COMPANY, Milwaukee, Wis.: Thermometers, Hygrometers, Barometers, &c. Represented by O. L. Voigt.

JOINTLESS REFRIGERATOR MFG. COMPANY, Milwaukee: Jointless Refrigerators. Represented by Wm. Von Baumbach and O. S. Lewis.

LAWRENCE BROTHERS, Sterling, Ill.: Builders' Hardware. Represented by B. F. Isbell.

LENNOX FURNACE COMPANY, Marshalltown, Iowa: Represented by J. M. Veech and W. G. Healz.

A. J. LINDEMANN & HOVERSON COMPANY, Milwaukee: Lindemann Stoves and Ranges and Sheet Metal Goods. Represented by P. Jones, Z. M. Zweck and Jos. B. Kettenhofen.

LUTHER BROS. MFG. COMPANY, Milwaukee: Tool Grinders. Represented by Ed. Clark.

LYONS SPECIALTY COMPANY, Lyons, Iowa: Petersen Steel Barn Door Latch and Holder. Represented by Wm. Petersen.

MAJESTIC FURNACE & FOUNDRY COMPANY, Huntington, Ind.: Majestic Coal Chute. Represented by H. F. Zent.

MARLIN FIRE ARMS COMPANY, New Haven, Conn.: Firearms and Ammunition. Represented by Charles Porter.

A. D. MEYER, Milwaukee, Wis.: Manufacturers' Agent, Stoves and Heaters.

MICHIGAN WASHING MACHINE COMPANY, Muskegon, Mich.: Washing Machines. Represented by G. E. Harding.

MILWAUKEE CORRUGATING COMPANY, Milwaukee, Wis.: Sheet Metal Roofing, Steel Ceilings, Conductor Pipe Elbows, Cornices, &c. Represented by Louis Kuehn, J. K. Davies, C. H. Krebs, J. L. Bantz, A. P. Roberts and H. J. Herzog.

MILWAUKEE STOVE & HEATER COMPANY, Milwaukee: Stoves, Ranges, Boilers, Radiators, Furnaces, Registers and Stove Dealers' Specialties. Represented by W. J. Breese, C. J. Seager, W. L. Powell and H. J. Beckerle.

BENJAMIN MOORE & CO., New York and Chicago: Muresco Wall Wall and Ceiling Paints. Represented by C. J. Scribner and C. S. Brink.

L. J. MUELLER FURNACE COMPANY, Milwaukee: Mueller Furnaces and Boilers. Represented by L. J. Mueller, Jr., G. C Mueller, N. B. Garnsey and J. H. Benny.

NEW MFG. COMPANY, Canton, Ohio: Haying Tools and Hardware Specialties. Represented by J. M. Mobley, Charles Domer and H. S. Nunamaker.

OHIO VARNISH COMPANY, Cleveland, Ohio: Varnishes. Represented by W. H. Angell.

OHLERKING & SMITH, Chicago, Ill.: Perfect Faucet Cushions. Represented by J. H. Ohlerking.

ONEIDA COMMUNITY, Ltd., Oneida, N. Y.: Game Traps, Chains, &c. Represented by Frank H. Primo and W. J. Scanlon.

E. L. PARMENTER, Milwaukee: Safety Teeter Rocker. Represented by Ed. Klann.

PATEK BROTHERS, Milwaukee: Paints and Varnishes. Represented by Norton A. Roos, W. H. P. McElwee, J. A. Magill, J. K. Fox and F. P. Jacka.

JAMES E. PATTON COMPANY, Milwaukee, Wis.: Paints. Represented by L. W. Bowman, C. F. Ehle, Sam Swartz and Henry Benz.

PECH-HAMRE MFG. COMPANY, Berlin, Wis.: Metal Specialties, Mail Boxes, Latches and Automatic Trucks. Represented by Fred R. Peck.

PITTSBURGH STEEL COMPANY, Pittsburgh: Fence. Represented by W. F. McNamara.

JOHN PRITZLAFF HARDWARE COMPANY, Milwaukee: Hardware Represented by Geo. Davies and J. H. Marschalck.

QUAKER CITY RUBBER COMPANY, Chicago: Hose and Rubber Goods. Represented by J. B. Freye, Milwaukee.

REPUBLIC METALWARE COMPANY, Buffalo, N. Y.: Savory Roasters. Represented by James E. Harper.

JACOB RETTERER, Chicago, Ill.: Stoves, Ranges and Furnaces. Represented by Wm. O. Retterer.

REVERE RUBBER COMPANY, Boston and Chicago: Garden Hose. Represented by S. F. Denny and A. F. Wilcox.

ROCK ISLAND TOOL COMPANY, Rock Island, Ill.: Vises. Represented by C. E. Shields.

ROYAL SPRING COMPANY, Clinton, Iowa: Fly Killers. Represented by Carroll E. Armstrong.

R. J. SCHWAB & SONS COMPANY, Milwaukee: Schwab Side Wall Registers.

SHARPLES SEPARATOR COMPANY, West Chester, Pa.; Chicago: Cream Separators. Represented by Z. L. Wright and A. G. Kessler.

SPEICH STOVE REPAIR COMPANY, Milwaukee, Wis.: Stove Repairs, Stoves, Ranges and Furnaces, Builders' and Plumbers' Cast Specialties. Represented by R. A. Boers, M. H. Hinz, W. H. Nehls, Albert Speich and Robert Bourse.

STANLEY WORKS, New Britain, Conn.: Builders' Hardware. Represented by H. M. Libe.

STOWELL MFG. COMPANY, Jersey City, N. J.: Concrete, Cork, Asbestos and Gravel Roofings, Metal Paint, Roof Coating, Roof Cement, &c. Represented by W. B. Stowell.

STOWELL MFG. & FOUNDRY COMPANY, South Milwaukee: Wall Registers, Hay Tools, Door Hangers and Vises. Represented by R. A. Nourse, W. A. Coffman and R. E. Evans.

STRAYER & NESBITT, Minneapolis, Minn.: Agents Estate Stoves and Ranges and Gas Appliances. Represented by W. W. Strayer and W. L. Nesbitt.

THATCHER FURNACE COMPANY, Chicago: Furnaces, Steam and Water Heaters. Represented by R. C. Cook.

TWENTIETH CENTURY HEATING & VENTILATING COMPANY, Akron, Ohio: Furnaces, Steam and Hot Water Boilers. Represented by E. L. Jaynes and R. M. Clark.

VERMONT FARM MACHINE COMPANY, Bellows Falls, Vt.: United States Cream Separators. Represented by F. H. Bush.

VOSS BROS. MFG. COMPANY, Davenport, Iowa: Washing Machines. Represented by W. H. Voss, Arthur Clifford and C. F. Ficks

WAHLE FOUNDRY & MACHINE WORKS, Davenport, Iowa: Washing Machines. Represented by Herman H. Wahle.

WESTERN BROKERAGE COMPANY, Milwaukee, Wis.: Washing Machines, Metal Window Screens and Hardware Specialties. Represented by Geo. H. Kusel and H. I. Weber.

WHITE LILY MFG. COMPANY, Davenport, Iowa: Washing Machines. Represented by Sam White, A. F. Victor and A. Ruhling.

WINCHESTER REPEATING ARMS COMPANY, New Haven, Conn.: Firearms and ammunition. Represented by F. H. Siefken.

WISCONSIN FOUNDRY & STEEL WORKS, Milwaukee, Wis.: Stoves. Represented by John Jungers, Robert Koeppe and Jos. Lubach

WIXSON BROS. COMPANY, Milwaukee: Jobber, Stoves, Ranges, Paints and Hardware Specialties. Represented by Albion F. Wixson, W. W. Wixson and Earl M. Wixson.

ASSOCIATION MAP OF WISCONSIN.

We give herewith a map of Wisconsin just prepared, which indicates how completely the association covers the State. All of the towns designated, comprising practically every place of consequence in the State, are represented in the association by one or more members. The organization also includes a few merchants located in Michigan. The membership of the association now comprises nearly 650 merchants in good standing with dues paid up to date, a record which is noteworthy and creditable.

Herwig & Briggs have bought the Hardware, Stove, Sporting Goods and Furniture business of Joseph Wozab, Humboldt, Neb.

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North Dakota Retail Hardware Association.

THE twelfth annual convention of the North Dakota Retail Hardware Association was held in the Commercial Club rooms at Fargo, on January 28, 29 and 30. From every standpoint this was undoubtedly one of the most successful conventions ever held by the association. The spirit of enthusiasm and earnestness prevailed throughout. It probably was the most largely attended convention of any the association has yet held. When the convention was called to order on Wednesday morning, the hall was filled, even the standing room being encroached upon. The Hotel Metropolis was the headquarters, and it was filled to the limit. The overflow found its way to the Waldorf, which was also fully occupied. The members were much pleased at having the opportunity of meeting and shaking hands with their Governor, Hon. John Burke, who delivered a very interesting speech on Wednesday.

Convention Committees.

The following convention committees were appointed by President Emery:

TRANSPORTATION: Hubert Harrington, Fargo; J. H. McCullom, Hope.

NOMINATIONS: A. J. Smith, Carrington; H. T. Helgeson, Milton; H. D. Warner, Westhope.

RESOLUTIONS: G. W. Wolbert, Bismarck; G. A. Dahle, Carpio; J. A. White, Edgeley.

BY-LAWS: H. A. Moe, Churches Ferry; W. R. McIntosh, Bottineau; E. E. Elliott, Sanborn; H. F. Emery, Fargo; C. N. Barnes, Grand Forks.

W. R. McINTOSH, President.

Secretary's Annual Report.

The annual report of C. N. Barnes, Grand Forks, secretary of the association, was as follows, in part:

As many of you no doubt recall, this association was organized in Grand Forks, September, 1897, with a charter membership of 23. Each succeeding year we have been able to increase the number, keeping it at all times, I believe, the largest in percentage of any of the Hardware associations in the United States. By largest I mean that we have the greatest percentage of all Hardware merchants in the State of any of the different Hardware associations.

Irregular Practices.

At the last annual meeting of this association it was voted to have your secretary keep the membership advised of all irregularities on the part of jobbers and manufacturers that were reported to him and he was unable to adjust. I have endeavored to carry out these instructions, and would be pleased to learn what has been done after receiving the information by the individual members during the year toward aiding this work.

Information Bulletin.

When it was decided to furnish our members with information of this character we then had to decide on the best method of conveying it to our membership. Your Executive Committee, after considering various methods, decided to issue what has been styled an "Information Bulletin," sending them at such intervals as conditions warranted. Since our meeting held last Marcr we have mailed eight different issues, all of which have gone to our members, with the exception of the last two, which have been sent to all Hardware merchants in the State. I should like to know if this method of placing information before our members is satisfactory, and if so if it is your wish to continue same in the future.

Domestic Parcel Post.

I would dislike very much to believe that there were any of our members at this time who have not written their Senators and Congressmen urging their support in the defeat of any parcel post bill that may come up, but if there should be let me again emphasize the necessity of keeping the matter continuously and thoroughly agitated. It seems to be the general impression that there is but little chance of anything being done toward the passage of such a bill during the present Congress, but I can assure you that those favoring such a measure are awake at all times and working all avenues possible to obtain support for their bills.

Lack of Co-operation.

I regret to be again compelled to make mention of an apparent lack of co-operation given your secretary in the work of his office, where specific assistance is asked for at frequent intervals throughout the year. For a very good illustration, will say that during the month of December I sent a printed sheet containing the names of the Hardware merchants of North Dakota to all whose names appeared on this list. I specifically asked in a letter accompanying the list that each one receiving same examine and correct it, returning as promptly as possible.

Up to the present time I have received just five out of 450 mailed, which naturally causes me to feel that I am not always given the co-operation entitled. I make mention of this instance in the most friendly spirit, and for no other purpose than that of trying to impress upon you that your promptness in replying to all communications sent from this office aids very materially in our work and saves the association a large amount of money expended each year for postage and stationery.

Hardware Mutual Insurance.

During one of the sessions of this convention we are to be favored with an address from C. F. Ladner, who is at the head of one of the most successful business enterprises in the country, and who by his conservative business judgment and that of his associates has built up an institution that every Hardware merchant looks to with great pride. This institution is the Hardware Dealers' Mutual Fire Insurance Company of Minnesota. It was organized a few years ago, and each year since its organization it has been able to save to the members of the different Hardware associations of the country a large percentage of the charges made for insurance by the old line companies, and in addition has set aside a portion of its savings each year as a surplus fund. Their latest statement shows considerably over $100,000 placed in that fund, and in addition to this accumulation they are able to refund on all policies maturing in 1908 50 per cent. of the old line rates.

There are other mutual Hardware insurance companies showing excellent statements at this time. The Wisconsin for 1906 is also refunding 50 per cent.; the Iowa, 45 per cent. The Nebraska and National both make good showings, but not having their latest statements I cannot submit exact figures to you.

In all probability you all know that none but Hardware merchants who are members of the Hardware Association in the State where they reside are permitted to insure in these companies. It appears to me that those Hardware merchants in North Dakota who are not members of our association are not taking advantage of the opportunity that is afforded them of saving 50 per cent. on their insurance by identifying themselves with us. To those of our members that are not carrying mutual insurance it would seem as though they, too, were not keeping their insurance account down to the minimum possible, as it could be reduced very materially if a portion of their insurance was carried with some of the Hardware mutual companies.

Governor Burke on Transportation and Navigation.

Governor John Burke of North Dakota, delivered a strong address, in which he referred at some length to the question of transportation and navigation. He said that this was one of the greatest questions before the people of the country to-day, and especially the people of North Dakota, because in that State they raised so much that they did not need and needed so much that they did not raise. He suggested the improvement of waterways—that the Red River of the North be made navigable from Canada, and that reservoirs be built along the banks of the Missouri River to take care of the overflow of water in the spring, as the banks of that river were very low. The reservoirs, he suggested, could be used for the purpose of irrigating trees, which might eventually be planted by the Government in case a forest reserve was made.

C. F. Ladner's Address.

C. F. Ladner, St. Cloud, Minn., president of the Retail Hardware Mutual Fire Insurance Company of Min-

nesota, made a brief address. One of the points made by Mr. Ladner was in regard to the co-operation of organizations representing different lines of trade, in regard to which he spoke as follows:

One thing I would like to impress upon your minds which I think we are a little slack on and that is that we should get in closer touch with other organizations of this nature. Now you have in this State an Implement dealers' association, a coal dealers' association and grocers' association. Each one works along similar lines to ours, but we do not get together and work jointly. I believe that if some plan was evolved, either by this association or one of the others, by which delegates could be selected by each of the associations for the purpose of meeting to discuss various problems, a great deal more could be accomplished than can be accomplished as individual associations.

Professor Ladd on Paint Tests.

Prof. E. F. Ladd, State Dairy and Food Commissioner of North Dakota, prefaced his address by stating that he favored national Paint legislation and that such a bill had been prepared by Representative Marshall of North Dakota. He said he still stood for the North Dakota law as enacted, and that he had not changed his views in regard to it. Mr. Ladd spoke in part as follows:

From 70,000,000 to 80,000,000 gal. of Paint are annually produced in the United States. This means an annual outlay to the people of this country of not less than $100,000,000 for Paints as protective and decorative coats. The cost of applying this material is not less to the public than another $100,000,000, and if poor material is employed the cost of further deterioration of the buildings cannot well be estimated.

C. N. BARNES,
Secretary.

H. F. EMERY,
Treasurer.

Is not then the study of Paints a subject worthy of careful consideration? It is also of importance for the further reason that we need a more accurate knowledge of the relative value of the various Paint pigments, and the various combinations of the same, as well as a more definite acquaintance with the properties of the vehicle employed. To what extent shall volatile driers be used and what is the effect of water in Paints in their wearing quality? We also need a more careful study of the physical and chemical properties of Paint, and how these properties affect the wearing quality.

Why Do Paints

"crack," "alligator," "buckle," "peel" or "go crazy," &c.? Scores of such questions present themselves for our consideration, and, if we examine Paint literature, confusion and not satisfaction results therefrom, largely because conclusions have been based upon theories rather than proven facts.

Sabin says: "Most of the failures of lead and zinc Paints are due to the use of these volatile thinners. (Referring to benzine and turpentine.) A good japan drier is what he would recommend, but many of these are made with rosin in place of resin, and rosin is an injury to the durability of any Paint. Again, boiled linseed oil not unfrequently contains similar inferior driers used in its preparation. If no false or misleading statements were made with regard to the composition of the Paints themselves, it will be seen that there are many important questions that need to be investigated for the benefit of the public at large. Such investigations can best be made at our experiment stations where, already, there exist facilities for conducting accurate investigation upon Paints in both the laboratory, on buildings and upon properly constructed test fences.

In 1906 the North Dakota experiment station began, in connection with the laboratory tests on Paint, a series of practical painting tests, carried out upon substantially constructed test fences. These fences have been repeatedly described and are familiar to many of my hearers who have seen them. Each test section contains approximately 25 sq. ft. upon each side of the fence; one side being two types of clapboards, the other two types of plain boards, placed like the clapboards horizontally upon the fence and with an 18-in. space beween the fence and the ground.

In the First Paint Tests,

Paints were employed as found upon the market. Among these there are to be found old Dutch process white lead, a sublimed lead, three types of lead and zinc Paints, a sublimed lead and zinc Paint, a lead and zinc Paint containing lime and silica, a Colorado zinc lead white combined with white lead and 10 to 20 per cent. of inert fillers; a white lead and zinc Paint containing 10 per cent. of lime, and magnesia as a silicate. There was one Paint containing 15 per cent. of water and 16 per cent. of benzine, with 30 per cent. of filler; a catalogue house Paint containing 24 per cent. of water, 4 per cent. of benzine and 51 per cent. of filler. We have white lead without any white lead in them; catalogue houses' Paint having 44 per cent. of water and benzine, no white lead at all, and 70 per cent. of make-weight or fillers combined with zinc. There was also a zinc and barytes Paint.

It will thus be observed that we have in this test a wide range of commercial Paints. In each case the Paints were applied by a competent, practical painter of large experience, and after the manner specified by the manufacturers in their descriptive literature. There will be found in our forthcoming report a detailed statement with regard to this experiment, showing the composition of the Paints, and the wearing properties up to the fall of 1907, or, practically one year after their application. We believe that these results will prove of great interest and value, and another year I am sure will demonstrate to the public something of the relative merits of the various Paints which were being sold in North Dakota prior to the enactment of the Paint law. Some of the Paints are wearing well, others are going "crazy," "alligatoring," while some are peeling badly, all under the same conditions, thus indicating a difference in value, not only as decorative coats for buildings but for protective purposes as well.

Inasmuch as the Paints have been applied only one year it is neither possible nor fair to draw very general conclusions regarding their relative merits. One Paint may show up well as first painting, but prove very bad for painting over a second time. In such cases we may blame the Paint last used, while in reality the Paint employed the first time may be the one at fault. On the other hand, the Paint may wear well the first year and then later begin to show its bad effects. It is very evident, however, from the results thus far that some of the Paints employed are more than worthless.

What is the cause of trouble in the foregoing experiments? Is the bad condition due to the 16 parts of water or the 28 parts of benzine in the vehicle, or is it due to the 70 parts of inert (?) lime, clay, barytes and silica with the absence of white lead? The real cause must be determined after more careful and extended investigations of the various causes for deterioration of Paints as now found on the market.

Experiments and Observations Thus Far Made

among the consumers of Paint have shown that the public are not demanding poor Paint, and since the exposures manufacturers have very materially changed their formulas during the past 18 months. The North Dakota law has undoubtedly had an influence in bringing about these changes, and, as our experiments would indicate, all to the advantage of the consumer.

During the winter of 1906-1907 plans were made for a most extensive and comprehensive series of Paint tests. In these tests white lead was to be tested along with specially prepared Paints, made under the direction of the National Paint Manufacturers' Association of the United States. This association, in addition to the donation of specially prepared Paints, also financially aided in enlarging the field of experiments, as did also the National White Lead Company. For this special work 18 Paints were prepared by and under direction of the National Paint Manufacturers' Association of the United States, and in these several tests it is to be assumed that the formulas have been prepared to represent the ideas of the several manufacturers in the association. They certainly represent a wide range of difference, but in the light of some claims set up by well-known authorities modifications may be found desirable after we learn the effects in the present combinations. The several formulas will be published during the present year as a bulle-

tin, and it will be impossible to discuss them at the present time in detail.

The Chief Purposes of Our Experiments

for the year have been to test out the North Dakota idea, and to determine whether all pigments are of like value in Paints and as the basis for Paints. The substitution of a small proportion of some other pigment in place of white lead and zinc oxide may be successfully made, but that any one of them may successfully take the place of good white lead has been seriously questioned by competent authorities. Certainly the extensive employment of benzine and water in place of good oil in the thinner has not been shown to be defensible.

At the close of the address, President Miles, of the National Association, asked the following question of Professor Ladd:

Is it possible to make a point of strictly pure Carbonate of Lead, Zinc, Linseed Oil and the necessary Dryer that will remain in solution and not get hard in the bottom of the Can; or in other words, to make a Paint that will prove satisfactory to the dealer selling the Paint and at the same time prove satisfactory to the consumer? If it is true that that condition will come about, would it be advisable, and in the interests of the handlers of Paint, as well as the consumers, to permit the use of Flax, which might be determined as not detrimental to the quality of the Paint in order to insure that Paint being in a salable condition at all times and used to the best advantage by the consumer?

Professor Ladd replied as follows:

There have been for years on the market several Paints that are made wholly of White Lead and Zinc. The manufacturers had several lines of these Paints, some of which have been on sale in North Dakota. In their best line they used nothing but the best White Lead and Zinc, and I have never heard any complaint on those Paints. There are some Paints made of White Lead and Zinc that settle so as to form a hard mass in the bottom of the can. Now, we haven't had any of those Paints, but I have seen them, and whether it is due to the process of manufacture or whether it is something which cannot be overcome I am not prepared to say until we have made further experiments; but I do not see any reason why there should be any necessity for the addition of a new product to keep them in suspension.

Address of National President Miles.

S. R. Miles, Mason City, Iowa, president of the National Association, in his address referred at some length to the work of the national organization, what it was doing and how it was benefitting the retailers at large. He also suggested that apparently a great many retailers, even officers of various associations, evidently felt relieved of any further responsibility along the line of conferences, interviews and work with the manufacturer and jobber since the national had been formed. This, he said, was a great mistake. While the National Association could carry out a great many things which could not be accomplished by the State organizations, working alone, nevertheless the State associations had questions that applied to their particular State and locality which could be handled by them with much better results than by the National. The National Association could only accomplish results when backed up in their efforts by the individual State organizations. He complimented the North Dakota Association on its promptness and willingness to respond to the call of the National officers for assistance, which had been greatly appreciated.

Mr. Miles also touched upon the question of parcel post. He said in investigating and discussing the subject he had been impressed with the unfairness on the part of the people behind this movement in asking the public at large to support a proposition which would unquestionably cost the Government millions of dollars each year. Should a parcel post be installed, the postal deficit would amount to about one-fifth of the Government's total income. He could not see wherein Postmaster-General Meyer had yet advanced any substantial reasons why the United States should have a parcel post and wherein the country would be benefitted by such a move.

Independence in Business.

N. A. Burdick, credit man for the Hall-Robertson Hardware Company, Fargo, read a paper on the subject of "Independence in Business, or Standing on Your Own Basis." We make the following extracts from the paper:

In the early stages of development of a new section of country, liberal terms and liberal credit are important elements in its upbuilding, and have certainly been potent factors in the business growth of North Dakota. I believe it is a natural result of the rapid progress made that the custom should change in regard to the handling of credits, not merely between jobber and dealer, but between all the various branches of buisness where long credits have prevailed.

Long Terms Have Been a Serious Load

to a great proportion of the retail trade, and have naturally extended to the jobbers who supplied them. Recent events seem to show that the time is ripe for a readjustment of this, and that the business of the future will be done more nearly on the basis of regular terms, as is done in older sections.

Each year shows an increasing number of merchants who discount or pay their bills when due, and to them it will mean no disturbance of their ordinary customs. To the merchant whose business is conducted with a moderate amount of capital, and is built up largely on long time credits, the change may seem to present some difficulty, but that it can be done, and that the result is worth the effort, I am sure can be attested by a large number of those present. All substantial and permanent success is a matter of slow growth. Sometimes we forget it and in the desire to forge ahead more rapidly fall a victim to overexpansion, of which we have heard so much recently, and which is almost invariably followed by a more or less painful contraction.

The Strongest Lesson to My Mind in Present Conditions

is that we must plan our business not so much on the outside assistance we can get as on the financial resources that we personally control. In adjusting our affairs to these conditions some will naturally lag by the wayside, causing hardship to the individual, but the general result will be of benefit to the business interests.

Naturally, the change suggested will take time, but the more rapidly we can accommodate ourselves to it the more quickly will business move forward in its accustomed way, with present inconvenience soon a memory of the past.

The Starting Point for a Change

of the kind mentioned would naturally be with the consumer. It has been more or less a common practice to allow accounts to run, using the money which should have been paid to the retailer for the purpose of acquiring more land or expansion in some other direction. You have most of you undoubtedly had experience in this direction sufficiently often to appreciate the wisdom of working to a basis where your customers will give their accounts first consideration, leaving new ventures to be cared for after debts have been paid. Discouraging the long carrying of accounts may curtail business to some extent where the capital invested is limited, but it appears to me it will be beneficial in the way of lessening chance of overexpansion and possible failure, and making such business as is done more profitable and satisfactory in every way.

The Tendency Nowadays in Business Is Toward Specialization,

and it has been pretty thoroughly demonstrated that it is not only advisable but necessary in order to get satisfactory results. Many a man scatters his business in a variety of lines, dividing his ability, energy and finances among two or three widely different enterprises, with the result that all are liable to suffer from lack of the close attention necessary to make a successful business under present day competitive methods. To illustrate: A great many merchants also conduct farming operations or other business that requires time and attention, and in a great many cases one or the other must suffer, and in all probability both. If the man of ordinary means decides to build up a mercantile business I believe his time and financial strength should all be used in that direction. The conditions under which business must be done require it, and I believe too many irons in the fire are a common source of trouble in many instances.

The average man may be a good merchant or a good farmer or hotel man, but it is hardly likely that he will make a success of all of them at the same time, and I believe he should confine his attention and financial resources to one in order to get the best results.

As I said before, changes in methods of doing business take time, and naturally mean some inconvenience, before we can adjust ourselves to them, but I believe each one should face the problem as he finds it, with a determination that his business affairs will be so shaped as to relieve him of the burden of carried over accounts and put him in position where he is standing on his own basis and dependent on no one for more than the ordinary courtesies which are a part of such affairs. It strikes me that

One Element of Danger Which Is Often Overlooked,

and which often brings disappointment that might be avoided is this: Often too little consideration is given to the possibilities and needs of a business before it is launched or the yearly campaign is mapped out. In other

words, too few merchants consider just what amount of business they may expect from their territory, just how large a stock is required to handle it, what yearly profits may be reasonably expected and what expense such a business will stand, and then govern themselves accordingly.

You can probably call to mind cases where new stores with liberal stocks were opened in localities already well supplied, which with extravagant expense accounts and ill advised credits have resulted in the failure which might have been avoided by proper consideration at the start.

The Business of the Future Will Probably Be Done Along Closer Lines

than heretofore. The extension of accounts will be materially lessened from what has been the practice in the past. To the man who has reached the point where he discounts his bills and whose accounts are closely collected each year, congratulations are due. To the merchant who has struggled with the evil of long carried accounts with limited resources, let us hope that by careful buying, giving credit customers to understand that accounts must be taken care of at a fixed date not too far distant, keeping necessary expenses as low as possible and avoiding the unnecessary, he will be freed from many of the annoyances of the past and find business a pleasure instead of a burden.

Mr. Burdick, on behalf of the company, extended an invitation to the members to visit its establishment, and after adjournment on Thursday morning many of the members made an inspection of the company's building.

Effective Advertising.

In connection with a paper on the subject of "Effective Advertising," R. E. Saberson of the Berkley System Company described the company's scheme of furnishing advertising matter to the merchant. He said that the company was prepared to furnish syndicated circulars, 500 of which would cost $1.50, representing a material reduction, as compared with the expense of getting them out by each individual merchant. Each merchant using the service could send to the company's central office his mailing list, where it could be set up on machines, so that when his circulars were printed they could be run through the folding and addressing machines and made all ready for mailing without the use of an envelope. The circulars could be mailed from the central office or by the retailer himself in his home town. A different series of goods, according to the season, were advertised each month. This, it was stated, not only saves the merchant the expense of buying a large number of electrotypes, but also saves him the trouble of preparing advertising, as well as the folding and addressing work. The advertising in the circular might also be run in the home paper or a zinc etching reproduction of the entire circular might be furnished at small cost.

Next Meeting at Bismarck.

The association received invitations from the Commercial Club at Bismarck, from the Mayor and Commercial Club of Grand Forks, and from the Mayor and Commercial Club at Fargo, to hold their next convention at those places. After some discussion, Bismarck was chosen as the next convention city.

Election of Officers.

The election of officers resulted as follows:

PRESIDENT, W. R. McIntosh, Bottineau.
FIRST VICE-PRESIDENT, G. W. Wolbert, Bismarck.
SECOND VICE-PRESIDENT, P. Fugelso, Minot.
SECRETARY, C. N. Barnes, Grand Forks.
TREASURER, H. F. Emery, Fargo.

I. A. Bjelde, Mayville and H. W. Moe, Churches Ferry, were elected members of the Executive Committee with the president, first vice-president, secretary and treasurer.

A. J. Smith, Carrington, and J. S. Cole, Lisbon, were elected delegates to the National convention.

Resolutions.

Among the resolutions adopted were the following:

Whereas, Under the present laws of the United States, the President of the United States has the power to set aside certain lands as forest reserve, and

Whereas, There is in this State a large section of land along the Little Missouri River known as "the bad lands," and

Whereas, This land cannot generally be used as farming land, and it had, not many years past, a good lot of timber which has since been destroyed for use of settlers on adjoining agricultural lands; be it

Resolved, That we request our members of Congress to see the President of the United States and the chief of the Bureau of Forestry of the United States and call their attention to these facts, and see if they will not set aside these lands for forest reserve in North Dakota.

Whereas, There is a national Congress for the improvement of our natural waterways, and

Whereas, This means an eventual saving for our State of North Dakota of many millions of dollars in the future, and

Whereas, We have two navigable rivers now under the control of the United States Government; be it

Resolved, That we most heartily endorse the purposes of this Congress for waterway improvements and to earnestly request our members of Congress to work at all times for such measures, and particularly for the improvement of the Red River of the North.

Whereas, There is an organized effort made by a few merchants in the large cities of the East to secure the passage by Congress of a parcel post measure, and

Whereas, Such organizations have only in mind the financial gain that would come direct to them and take no notice of the great additional cost this would incur to the already heavy deficit in the postoffice department, and

Whereas, Such a measure is absolutely against all the known laws of business for the merchants of the smaller cities of our country and can have no benefit to the farming communities of this country; therefore, be it

Resolved, That we do not believe in the passage of such a measure by any Congress, and we urge each member of Congress to use his utmost endeavors to defeat the passage of any such measure, and be it further

Resolved, That we do favor heartily and as being in line with the policy of our Government in doing the greatest good for the greatest number—that our members of Congress work consistently for the passage of 1-cent letter postage in the interest of the masses.

Whereas, It has been demonstrated by Prof. E. F. Ladd at our State Agricultural College that the people of this State have been buying water and dirt for lead, tonic and linseed oil, and

Whereas, Our Representative in Congress, Thos. F. Marshall, has introduced a bill in Congress for a national paint law, be it

Resolved, That we heartily endorse and favor the passage of such a bill, and that a copy of this be sent to each member of Congress from North Dakota, and that they each be asked to work for the passage of such a bill at this session of Congress.

Convention Notes.

On Monday evening the officers of the association were handsomely entertained by T. J. Duffy, Chicago, and John Antoine, Chicago, representatives of the Germer Stove Company, at their parlors in the Waldorf Hotel.

C. D. Britton, Northwestern sales manager for the Malleable Steel Range Company, South Bend, Ind., gave a supper on Tuesday evening at the Commercial Club rooms to a number of his friends and patrons among the members.

There was not much sightseeing as the cold weather, which had just set in before the convention opened, kept the delegates pretty well confined to their hotels when not in the convention hall. The thermometer registered 25 below on Tuesday morning.

On Wednesday evening the association gave an entertainment at the Grand. An excellent vaudeville programme was carried out. After the show those present marched in a body to the Commercial Club rooms, where they had been invited to a "smoker" by the Commercial Club. There was no lack of entertainment, and the members and other visitors had the pleasure of hearing another speech from Governor Burke.

Sheet Metal Boat Patterns.

No great degree of skill is required for the actual construction of small pleasure and hunting boats made of sheet metal, but it often happens that persons capable of doing such work are unfamiliar with the art of designing such craft. H. F. Thompson, Decorah, Iowa, in addition to the manufacture of galvanized iron boats, is giving particular attention to the furnishing of patterns by the use of which it is said that even an amateur workman can easily lay out and construct a safe, durable and serviceable boat. The designs furnished embrace a number of models, including canoes, family rowboats and propeller launches. It is stated by the designer that no special tools are required in the building of such boats, work being easily done with shears, rivet set, punch, saw, hammer and soldering outfit; such tools, in fact, as are always at hand in the ordinary shop departments of hardware stores or tin shops. Because of their lightness and portability, and for reason that they do not crack and require calking as do wooden boats, there is in almost every locality a demand for sheet metal boats. From the same set of patterns a boat can be built of galvanized iron in gauges from No. 16 to No. 22, and the design includes air chambers which guard against sinking from accidental puncture. Photographic prints and blue prints from drawings are included with patterns, showing the details of construction and material used and the manner of its as-

semblage. Notwithstanding the lightness of construction the use of power propellers is entirely feasible, and the designer is now offering patterns for a launch 20 ft. in length by 58 in. beam, designated as model G, with a carrying capacity from 9 to 12 persons. Three hundred pounds of steel are required for the construction of this model, which can be driven at a speed of 7½ to 12 miles an hour by 3 to 8 hp. motors. Mr. Thompson is prepared to furnish suitable gasoline engines or motors from 1½ to 25 hp. It would seem that hardware dealers and metal workers might profitably turn their attention to the building of metal boats, since work of this character would naturally develop at a season of the year when business in other lines is usually slack.

The Douglas Power Wagon Sprayer.

The pumping device shown in the illustration is designed as a handy apparatus for spraying or house service, either as a part of a gasoline engine outfit or driven from a wagon, from which latter combination it receives its name. In such use the large sprocket is mounted on the wagon wheel for a chain drive. With a gasoline engine the large sprocket is mounted on the crankshaft and the small sprocket is used to drive it direct from the engine. It is a stout little pump, with large air barrel that will work under pressure and without trouble, because the mechanism is equipped with a special compensating device in the cross head which prevents the breaking of the side

Douglas Power Wagon Sprayer.

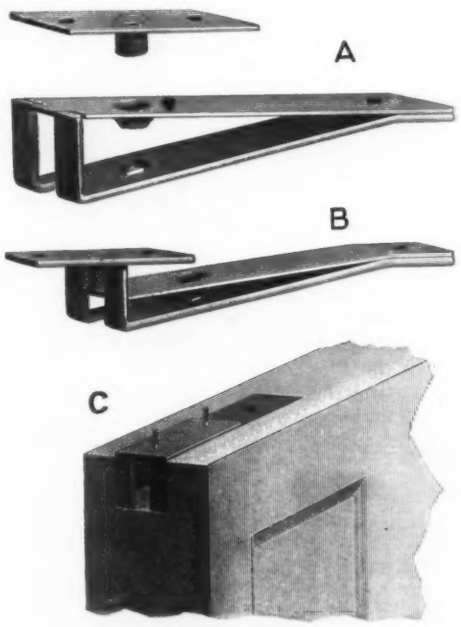
rods in case one pitman should get a lead on the other. The pump has a 2½-in. bore, 5-in. stroke; suction, 1-in. iron pipe and discharge ¾-in. iron pipe or hose, as preferred. It is manufactured by W. & B. Douglas, Middletown, Conn.

Emerson Electric Mfg. Company.

The Emerson Electric Mfg. Company, St. Louis, Mo., manufacturer of Emerson and Trojan alternating current fan motors, is offering for the season of 1908 an extensive variety comprising some 14 types of desk, ceiling and column fans suitable for 60 cycle current. All these operate on the induction principle, with brushes or commutators. They have armatures of the squirrel cage type, without insulated windings of any description. As a result they are said to operate perfectly year after year without the renewal of any part and without other attention than ordinary oiling.

Spring Pivot for Door Top.

The Standard Mfg. Company, Shelby, Ohio, is offering a new spring pivot for top of door which is used in connection with their Champion and Standard double acting spring floor hinges. With this spring pivot applied to a door the same can be set in place or taken down in a very short time. Parts marked A, here shown, illustrate the two parts composing the pivot; the upper one being the pivot pin which is placed in the head jamb of the door frame and the lower, the spring and socket which are fixed into the top corner of the door. The portion of the illustration marked B shows how the two parts are coupled together when hanging a door. The spring is pressed down to admit the pivot pin through the slot at the edge of the door, and when the pin comes

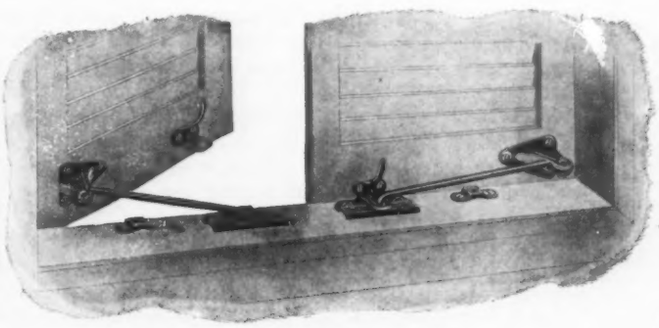


Spring Pivot for Door Top.

opposite the hole in the spring part it will enter and the spring go back to its normal position as shown in cut marked C.

Zimmermann's All Steel Shutter Fastener.

G. F. S. Zimmermann & Co., Frederick, Md., are manufacturing the shutter fastener shown in the accompanying illustration. A casement window adjuster of similar design is also offered which has sill plates flush with the sill. All parts are made of the best pressed steel, which is referred to as superior to cast iron in appearance and durability. The hook end of the rod is smooth for the hand to grasp and pear-shaped, so that it cannot jump from the sill plate. It has a double lock which will lock the shutter securely when slightly ajar and also when entirely closed. A shutter that becomes sagged or warped or covered with ice, so that it will not close tightly, can be firmly locked in its partly opened position without any readjustment of the parts. The lock bracket has a special



Zimmerman's All Steel Shutter Fastener.

shelf to carry the end of the brace rod and insure its locking. Brace rods are marked right and left on the under side to avoid confusion of parts, and the sill plates are so made that they cannot be put on backward. It is claimed for the device that it holds the blind open and bows at any angle, that it can be locked from without as well as within, that it does not interfere with the installation of fly screens, and that it can be attached to any hinged shutter that opens outward. It is made in any

finish or length of bar, and is recommended for bay windows, outside blinds, casement sashes, iron shutters and fire shutters.

Linolite System of Electric Lighting.

H. W. Johns-Manville Company, 100 William street, New York, has just put out a new system of electric incandescent lighting, which in the trade will be known as Linolite, a section view of the fixture being given herewith. Although incandescent lamps have progressed greatly radical changes have not been made in shape since their introduction. This system employs a long, tubular lamp in which the filament reaches from end to end. As the lamps are connected end to end they form a continuous line of light, suggestive of the name. The source of light being continuous the illumination is uniformly distributed

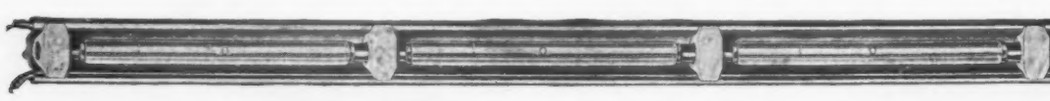


Fig. 1.—Section of Linolite, Showing Arrangement of Lamps in Reflector.

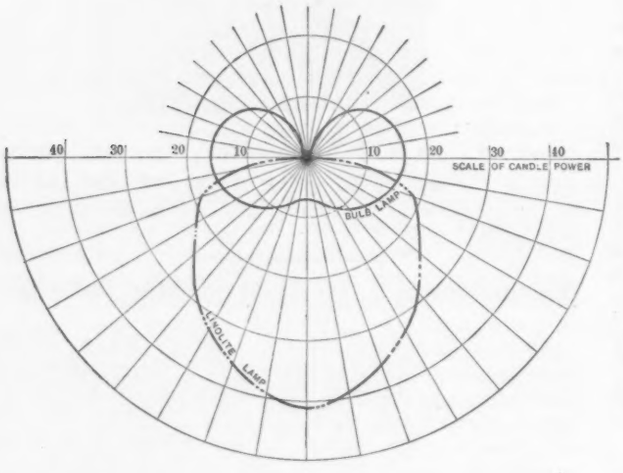


Fig. 2.—Polar Curves of Candle Power of 16 c.p. Bulb and 16 c.p. Linolite Lamps.

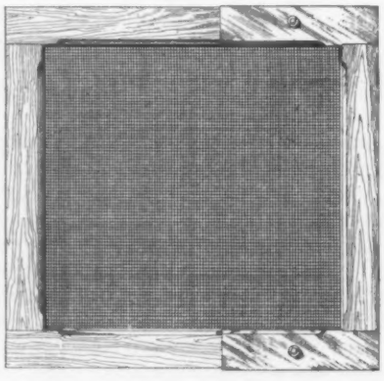
and the alternate bright and dark spots, characteristic of lighting with bulb lamps, are eliminated. The lamps are arranged in a semicircular reflector, which is made up in lengths required up to and including 10 ft. The position of the lamp relative to the reflector is such that the filament is located uniformly throughout its length in the focus of the reflector and thus a maximum of reflecting efficiency is obtained. Tests have shown, it is said, that the illumination secured from Linolite is much greater than from any ordinary bulb lamp. Another advantage of this system is the small space required. The entire reflector is only 2¼ in. wide and 1 in. deep, outer dimensions, so that it readily lends itself to emplacement in show windows, showcases, &c., and back of window frames or fillets, in such manner that the fixture will be practically invisible and the source of light screened entirely from the eye of the spectator, a common criticism of systems using bulb lamps for illumination being that the observer is often dazzled by the light from the lamps themselves. Fig. 2 shows the distribution of luminous intensity of Linolite, as compared with an ordinary 16 c. p. lamp in its end on position, both having the same size and length of filament and consuming the same current. This curve is referred to by the company as a certified test made by the city and guilds of London Institute, London, England. The block curve shows the candle power in and direction of the bulb lamp, while the dotted curve shows the corresponding values of the candle power of Linolite. The assertion is made that while the illumination given by the bulb lamp immediately in front is 7 to 8 c. p., that of Linolite is over 40 c. p., and the illumination from Linolite is, in fact, in every direction in front of the fixture much greater than that from the ordinary lamp. Linolite is particularly adapted for lighting show windows and cases, pictures, signs, desks, &c.; also for theatrical stage lighting, and the outlining of buildings for ornamental and display purposes. An important application of it is in the illumination of room interiors by reflected light, in which instance Linolite is placed above the cornices near the ceiling, from which the light is reflected.

Ideal Mfg. Company.

The Ideal Mfg. Company, New Haven, Conn., has issued a new handbook, No. 18, which refers to numerous improvements and changes in the company's products. Additions include reloading tools, molds, &c., for the company's new metal gas check bullets for high power rifles of different models and new designs of short range bullets for the .38 Colt's New Army and Smith & Wesson Military Revolvers. Improvements are shown and described for the Armory reloading outfit, new "Lightning" De-Capper for Krag and New Springfield shells, new Micrometer Sight Gauge for model 1901 peep sight. Primer tables, bullet tables and tables of velocity, trajectory and penetration have been revised and brought up to date. Another feature of this catalogue is that with the illustration and description of each bullet, general information is given as to what particular arm it is for, and the quantities of the various powders, high and low power smokeless, as well as black, that may be used, and much other valuable information for shooters of rifles, pistols and shotguns. A copy will be sent to all who send in their name and address, together with six cents in stamps.

Worthington Adjustable Lift Screen.

The Worthington Roller Screen Company, Baltimore, Md., is putting on the market the adjustable lift screen here shown. It is made of highly finished hard wood, golden oak or imitation mahogany. The cloth is a specially treated linen mesh and consequently rustless and not affected by salt air. While the cloth is exceptionally durable, the construction of the screen is such that it can easily be recovered. The adjustment is simple and enables a person to screen his house quickly and economically without the aid of a carpenter. There are only four sizes for a merchant to carry, as they are adjustable to any width from 22 to 46 in.



Worthington Adjustable Lift Screen.

Good Form Closet Sets.

In the line of wardrobe closet sets manufactured by the Chicago Form Company, Chicago, are embraced the articles here illustrated. Fig. 1 shows a trousers hanger arranged with flexible clamps designed for perfect adjustment to the surface of the fabric. The clamps have a slight outward turn at the end to avoid creasing at the edges and are bowed at the center to allow for the extra thickness of the hem at the seam. Fig. 2 represents a coat hanger adaptable to any size coat or jacket. It is made of pressed steel, nickel plated or enameled, and may be compactly folded for packing. It is also provided with shoulder plates which conform to the shape of the shoulder. The shoe rail, shown in Fig. 3, is designed for the convenient disposition of shoes. It is intended for attachment to the inside of the closet door or elsewhere, and is provided with raised points on the upper edge, which hold the shoes from being jarred from their position. The shoe rail here shown holds three pairs of shoes, and is jointed at the center in such a manner thta it may be easily folded.

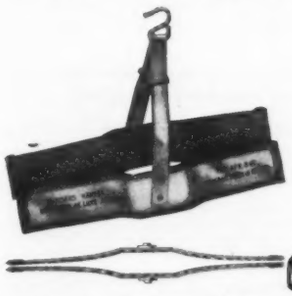


Fig. 1.—Trousers Hanger.

Fig. 2.—Coat Hanger. ...

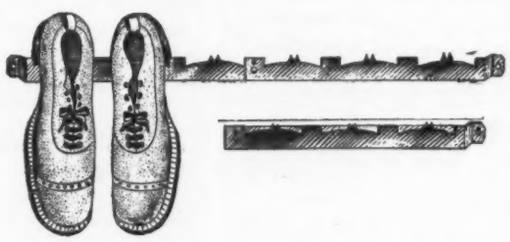


Fig. 3.—Shoe Rail, Open and Folded.

Boss Hose Reel.

The R. W. Whitehurst Company, Norfolk, Va., has added to its line of hose heels the one shown in the accompanying illustration. It is substantially constructed of oak and has two coats of paint and one of varnish. The wheels are 10 in. in diameter and roll easily. It weighs 20 lb. and holds from 100 to 150 ft. of hose. Besides its strength, the advantage of the reel, to which attention is especially called, is that it has no cross handle and thus occupies a minimum of space. It can be set in a narrow hall, and there is nothing sticking out to knock against.

Boss Hose Reel.

PAINTS, OILS AND COLORS

Animal, Fish and Vegetable Oils—

	℔ gal.
Linseed, State and Western, raw	41 @42
City, Boiled	45 @46
City, Raw	44 @..
Raw, Calcutta, in bbls.	70 @..
Lard, Prime, Winter	68 @72
Extra No. 1	51 @53
No. 1	49 @52
Cotton-seed, Crude, f.o.b. mill	31 @31½
Summer Yellow, prime	40½@40¾
Summer White	42 @43½
Yellow Winter	45 @45½
Sperm, Crude	59 @60
Natural Winter	72 @74
Bleached Winter	75 @76
Bleached Winter, Extra	@..
Tallow, Prime	59 @60
Whale, Crude	35 @36
Natural Winter	46 @48
Bleached Winter	49 @51
Extra Bleached Winter	52 @54
Menhaden, Brown, Strained	41 @42
Light Strained	41 @42
Northern	@..
Southern	37 @..
Cocoanut, Ceylon ℔ lb	6¾@ 7
Cochin ℔ lb	8 @ 8¼
Cod, Domestic, Prime	42 @44
Newfoundland	44 @46
Red, Elaine	40 @42
Saponified ℔ lb	5¾@..
Olive, Yellow	65 @70
Neatsfoot, Prime	55 @58
Palm, Lagos ℔ lb	6.05@6.15

Mineral Oils—

	℔ gal.
Black, 29 gravity, 25@30 cold test	13 @13½
29 gravity, 15 cold test	13½@14
Summer	12½@13
Cylinder, light, filtered	20½@21
Dark, filtered	18 @19
Paraffine, 903-907 sp. gravity	14½@15
903 sp. gravity	13½@14
883 sp. gravity	11 @11½
Red	13½@14

Miscellaneous—

Barytes:		
White, Foreign	℔ ton	$18.50@20.50
Amer. floated	℔ ton	19.00@20.00
Off color	℔ ton	13.00@16.50
Chalk, in bulk	℔ ton	3.00@ 3.40
China Clay, Imported	℔ ton	11.50@18.00
Cobalt, Oxide	℔ 100 lb	2.50@ 2.60
Whiting, Commercial	℔ 100 lb	.42@ .52
Gilders	℔ 100 lb	.55@ .60
Ex. Gilders	℔ 100 lb	.60@ .65

Putty, Commercial—℔ 100 lb

In bladders	$1.70 @1.85
In bbls. or tubs	1.20 @1.45
In 1 lb to 5 lb cans	2.65 @2.95
In 12½ to 50 lb cans	1.50 @1.90

Spirits Turpentine—℔ gal.

In Oil bbls	55 @55½
In machine bbls	55½@56

Glue—

	℔ lb
Cabinet	12 @15
Common Bone	7½@ 9
Extra White	18 @24
Fish, liquid, 50 gal. bbls., per gallon	60 @1.20
Foot Stock, White	12 @14
Foot Stock, Brown	9 @11
German Common Hide	10 @12
German Hide	12 @18
French	10 @40
Irish	13 @16
Low Grade	10 @12
Medium White	14 @17

Gum Shellac—

	℔ lb
Bleached, Commercial	25 @26
Bone Dry	31 @32
Button	40 @50
Diamond I	47 @48
Fine Orange	30 @35
A. C. Garnet	30 @31
G. A. L.	22 @23
Kala Button	20 @22
D. C.	49 @50
Octagon B.	38 @40
T. N.	25 @26
V. S. O.	47 @48

Colors in Oil—

	℔ lb
Black, Lampblack	12 @14
Blue, Chinese	36 @46
Blue, Prussian	32 @36
Blue, Ultramarine	13 @16
Brown, Vandyke	11 @14
Green, Chrome	12 @16
Green, Paris	@24
Sienna, Raw	12 @15
Sienna, Burnt	12 @15
Umber, Raw	11 @14
Umber, Burnt	11 @14

White Lead, Zinc, &c.—

	℔ lb
Lead, English white, in Oil	10⅛@10⅝
Lead, American White:	
Lots of 500 lb or over, in Oil	@ 6¾
Lots less than 500 lb, in Oil	@ 7¼
Lead, White, in oil, 25 lb tin pails	@ 7¼
Lead, White, in oil, 12½ lb tin pails	@ 7¾
Lead, White, in oil, 1 to 5 lb assorted tins	@ 8¾

Lead, American. Terms: On lots of 500 lbs. and over 2% for cash if paid in 15 days from date of invoice.

	℔ lb
Zinc, American, dry	5⅛@ 5⅝
Zinc, French:	
Antwerp, Red Seal, dry	8¼
Antwerp, Green Seal, dry	10½
Paris, Red Seal, dry	8¾
Paris, Green Seal, dry	10¾

Zinc, V. M. French, in Poppy Oil:
Green Seal:
Lots of 1 ton and over 12⅞@13⅜
Lots of less than 1 ton 13⅛@13⅝
Zinc, V. M. French, in Poppy Oil:
Red Seal:
Lots of 1 ton and over 11⅜@11⅞
Lots of less than 1 ton 11⅝@12⅛
Discounts.—French Zinc.—Discounts to buyers of 10 bbl. lots of one or mixed grades, 1%; 25 bbls., 2%; 50 bbls., 4%.

Dry Colors—

	℔ lb
Black, Carbon	6¼@10
Black Drop, American	3½@ 9
Black Drop, English	5 @15
Black, Ivory	16 @20
Lamp, commercial	4 @ 6
Blue, Celestial	4 @ 6
Blue, Chinese	31 @33
Blue, Prussian	29 @31
Blue, Ultramarine	3½@15
Brown, Spanish	½@ 1
Carmine, No. 40	$3.10@3.25
Green, Chrome, ordinary	3½@ 5
Green, Chrome, pure	17 @25
Lead, Red, bbls., ½ bbls., kegs.	@ 6¾
Litharge, bbls., ½ bbls., kegs.	@ 6¾
Ocher, American ℔ ton	$8.50@16.00
American Golden	2½@ 3¼
French	1¼@ 2
Foreign Golden	3 @ 4
Orange Mineral, English	10 @11
French	11⅜@12
German	10 @11
American	8½@ 8¾
Red, Indian, English	4½@ 6
American	3 @ 3¼
Red, Turkey, English	4 @10
Red, Tuscan, English	7 @10
Red, Venetian, Amer. ℔ 100 lb	$0.50@1.25
English ℔ 100 lb	$1.15@1.60
Sienna, Italian, Burnt and Powdered	3 @ 9
Italian, Raw, Powdered	3 @ 7
American, Raw	1½@ 2
American Burnt and Pow'd.	1½@ 2
Talc, French ℔ ton	$18.00@25.00
American ℔ ton	15.00@25.00
Terra Alba, French ℔ 100 lb	.90@ 1.00
English ℔ 100 lb	.80@ 1.00
American ℔ 100 lb, No. 1	.75@ .80
American ℔ 100 lb, No. 2	.60@ .65
Umber, T'key, Bnt. & Pow.	2¾@ 3
Turkey, Raw and Powdered	2¾@ 3
Burnt, American	1¼@ 2
Raw, American	1½@ 2
Yellow Chrome, Pure	13 @15
Vermilion, American Lead	7 @25
Quicksilver, bulk	65 @..
Quicksilver, bags	@66
English, Imported	65 @70
Chinese	70,90@1.00

Current Hardware Prices.

General Goods.—In the following quotations General Goods—that is, those which are made by more than one manufacturer—are printed in *Italics*, and the prices named, unless otherwise stated, represent those current in the market as obtainable by the fair retail Hardware trade, whether from manufacturers or jobbers. Very small orders and broken packages often command higher prices, while lower prices are frequently given to larger buyers.

Special Goods.—Quotations printed in the ordinary type (Roman) relate to goods of particular manufacturers, who are responsible for their correctness. They usually represent the prices to the small trade, lower prices being obtainable by the fair retail trade, from manufacturers or jobbers.

Range of Prices.—A range of prices is indicated by means of the symbol @. Thus 33⅓ @ 33⅓ & 10% signifies that the price of the goods in question ranges from 33⅓ per cent. discount to 33⅓ and 10 per cent. discount.

Names of Manufacturers.—For the names and addresses of manufacturers see the advertising columns and also THE IRON AGE DIRECTORY, issued May, 1907, which gives a classified list of the products of our advertisers and thus serves as a DIRECTORY of the Iron, Hardware and Machinery trades.

Standard Lists.—"The Iron Age Standard Hardware Lists" contains the list prices of many leading goods.

Additions and Corrections.—The trade are requested to suggest any improvements with a view to rendering these quotations as correct and as useful as possible to Retail Hardware Merchants.

Adjusters, Blind—

Columbian and Domestic.....33⅓%
North's 10%
Zimmerman's—See Fasteners, Blind.

Window Stop—

Ives' Patent.....35%
Taplin's Perfection.....35%

Ammunition—See *Caps, Cartridges, Shells, &c.*

Anti-Rattlers—

Fernald Mfg. Co. Burton Anti-Rattlers, ₱ doz. pairs, Nos. 1, $0.75; 2, $0.60; 4, $1.00; 5, $0.50.
Fernald Quick Shifter, ₱ doz. pairs .....$2.00@$3.00

Anvils—American—

Eagle Anvils.....₱ lb @8¼¢
Hay-Budden, Wrought.....9⅛@9¾¢
Trenton .....₱ lb 9⅛@9¾¢

Imported—

Swedish Solid Steel Sisco, Superior, ₱ lb.....10@10½¢
Peter Wright & Sons, ₱ lb., 84 to 349 lb. 11¢; 350 to 600 lb, 11¾¢.

Anvil, Vise and Drill—

Millers Falls Co., $18.00.....15&10%

Apple Parers—See *Parers, Apple, &c.*

Aprons, Blacksmiths'—

Livingston Nail Co.....10%

Augers and Bits—

Com. Double Spur.....75@80%
Jennings' Patn., Bright, 65&10@70%
Black Lip or Blued...65@65&5%
Boring Mach. Augers.....70%
Car Bits, 12-in. twist.....40&10%
Ford's Auger and Car Bits.....40&5%
Ft. Washington Auger Co., Conard's 35%
Forstner Pat. Auger Bits.....25%
C. E. Jennings & Co.:
No. 10 ext. lip, R. Jennings' list, 25&7½%
No. 30, R. Jennings' list.....50%
Russell Jennings .....25&10&2½%
L'Hommedieu Car Bits.....15%
Mayhew's Countersink Bits.....45%
Pugh's Black.....30%
Pugh's Jennings' Pattern.....35%
Snell's Auger Bits.....60%
Snell's Bell Hangers' Bits.....60%
Snell's Car Bits, 12-in. twist.....60%
Snell's King Auger Bits.....50%
Wright's Jennings' Bits.....60%

Bit Stock Drills—

See *Drills, Twist.*

Expansive Bits—

Clark's Pattern, No. 1, ₱ doz. $26; No. 2, $18.....60&10%
Ford's, Clark's Pattern.....66⅔&5%
C. E. Jennings & Co., Steer's Pat..25%
Lavigne Pat., small size, $18.00; large size, $26.00.....60&10%
Swan's 60%

Gimlet Bits—

Per gro.
Common Dble. Cut....$3.00@3.25
German Pattern, Nos. 1 to 10, $4.75; 11 to 18, $5.75

Hollow Augers—

Bonney Pat., per doz..$6.50@7.00
Ames .....25&10%
Universal 20%

Ship Augers and Bits—

Ship Augers.....40&10%
Ford's .....33⅓&5%
C. E. Jennings & Co.:
L'Hommedieu's 6%
Watrous' .....33⅓&7½
Snell's 40%

Awl Hafts—See *Handles, Mechanics' Tool.*

Awls—

Brad Awls:
Handled .....gro. $2.75@3.00
Unhdled, Shldered...gro.63@66¢
Unhandled, Patent..gro.66@70¢
Peg Awls:
Unhandled, Patent..gro. 31@34¢
Unhdled, Shldered..gro. 65@70¢
Scratch Awls:
Handled, Com...gro. $3.50@4.00
Handled, Socket..gro.$11.50@12.00

Awl and Tool Sets—See *Sets, Awl and Tool.*

Axes—

Single Bit, base weights: Per doz.
First Quality.....$4.75@5.00
Second Quality.....$4.25@4.50
Double Bit, base weights:
First Quality.....$7.00@7.50
Second Quality.....$6.50@6.75

Axle Grease—

See *Grease, Axle*

Axles—Iron or Steel

Concord, Loose Collar..4½@5 ¢
Concord, Solid Collar...4¾@5¼¢
No. 1 Common, Loose...3⅝@4¼¢
No. 1½ Com., New Style..4½@5 ¢
No. 2 Solid Collar.....4½@5 ¢
Half Patent:
Nos. 7, 8, 11 and 12..65@65&10%
Nos. 13 to 14.....65@65&10%
Nos. 15 to 18.....70@70&10%
Nos. 19 to 22.....70@70&10%

Boxes, Axle—

Common and Concord, not turned lb., 5@6¢
Common and Concord, turned. lb., 6@7¢
Half Patent.....lb., 9½@10¢

Bait—Fishing—

Hendryx:
A Bait.....30%
B Bait.....25%
Competitor Bait.....20&5%

Balances—Sash—

Caldwell new list.....50%
Pullman .....50&10@60%

Spring—

Spring Balances.....50&10@60%
Chatillon's:
Light Spg. Balances.....50@50&10%
Straight Balances.....40@40&10%
Circular Balances.....50&10%
Large Dial.....30%

Barb Wire—See *Wire, Barb.*

Bars—Crow—

Steel Crowbars, 10 to 40 lb.... per lb., —@2½@2¾¢

Towel—

No. 10 Ideal, Nickel Plate..₱ gro. $8.50

Beams, Scale—

Scale Beams.....40%
Chattillon's No. 1.....30%
Chattillon's No. 2.....40%

Beaters, Carpet—

Holt-Lyon Co.:
No. 12 Wire Coppered ₱ doz. $0.80; Tinned $0.85
No. 11 Wire Coppered ₱ doz. $1.15; Tinned $1.20
No. 10 Wire Tinned.....₱ doz. $1.50

Beaters, Egg-

Holt-Lyon Co.:
Holt, per doz., No. 5, Jap'd, $0.80; No. A, Jap'd, $1.15; No. B, Jap'd, $1.85; No. 6, Jap'd, $1.65.
Lyon, Jap'd, per doz., No. 2, $1.35.
Taplin Mfg. Co.:
Improved Dover, per gro., No. 60, $6.00; No. 75, $6.50; No. 100, $7.00; No. 102, Tin'd, $8.50; No. 150, Hotel, $15.00; No. 152, Hotel Tin'd, $17.00; No. 200, Tumbler, $8.50; No. 202, Tumbler Tin'd, $9.50; No. 300, Mammoth, per doz., $25.00.
Turner & Seymour Mfg. Co.:
T. & S. Dover.....$6.50

Bellows—

Blacksmith, Standard List..
Split Leather.....60&10@65%
Grain Leather.....50@50&10%

Hand—

Inch..	*6*	*7*	*8*	*9*	*10*
Doz..	*$5.00*	*5.50*	*6.00*	*6.50*	*7.50*

Molders—

Inch..	*10*	*12*	*14*	*16*
Doz..	*$7.50*	*9.00*	*12.00*	*15.00*

Net Prices.

Bells—Cow—

Ordinary Goods...75&5@75&10&5%
High Grade.....70&10@75%
Jersey .....75&10%
Texas Star.....50%

Door—

Home, R. & E. Mfg. Co.'s.....55&10%

Hand—

Polished, Brass.....50&10@60%
White Metal....50&10@50&10&5%
Nickel Plated.....50&5%
Swiss .....50&5%
Cone's Globe Hand Bells.....33⅓@35%

Miscellaneous—

Farm Bells.....lb., 2¼@2½¢
Church and School....60@60&5%

Belting—Leather—

Extra Heavy, Short Lap..60&5%
Regular Short Lap....60&10&5%
Standard .....70&5%
Light Standard.....75%
Cut Leather Lacing.....40&10%
Leather Lacing Sides, per sq. ft. 2½¢

Rubber—

Agricultural (Low Grade).... 75@75&5%
Common Standard....70@70&10%
Standard .....70@70&5%
Extra .....60&5@60&10%
High Grade.....50&5@50&10%

Bench Stops—

See *Stops, Bench*

Benders and Upsetters, Tire—

Green River Tire Benders and Upsetters 20%

Bicycle Goods—

John S. Leng'e Son & Co.'s 1907 list:
Chain, Parts, Spokes.....50%
Tubes 60%

Bits—

Auger, Gimlet, Bit Stock Drills, &c.—See *Augers and Bits.*

Blocks—Tackle—

Common Wooden.....75@75&5%
B. & L. B. Co.:
Boston Wood Snatch, 50%; Eclipse Steel, 75%; Hollow Steel, 50&10%; Star Wire Rope, 50%; Tarbox Metal Snatch, 50%; Tarbox New Style Steel, 50&10%; Wire Rope Snatch, 50%.
Lane's Patent Automatic Lock and Junior 30%
See also Machines, Hoisting.

Boards, Stove—

Paper and Wood Lined.....40%
Embossed 50%

Boards, Wash—

See *Washboards.*

Bobs, Plumb—

Keuffel & Esser Co.....33⅓%

Bolts—

Carriage, Machine, &c.—

Common Carriage (cut thread):
⅜ × 6 and smaller..70&5@—%
Larger and longer.....65@—%
Phila. Eagle, $3.00 list...80@—%
Bolt Ends.....65&5@—%
Machine (Cut Thread):
⅜ × 4 and smaller.70&7½@—%
Larger and longer...65&5@—%

Door and Shutter—

Cast Iron Barrel, Japanned, Round Brass Knob:

Inch	*3*	*4*	*5*	*6*	*8*
Per doz..	*$0.30*	*.35*	*.45*	*.60*	*.80*

Cast Iron Spring Foot, Jap'd:

Inch	*6*	*8*	*10*
Per doz.....	*$1.20*	*1.50*	*2.25*

Cast Iron Chain, Flat, Japanned:

Inch.....	*6*	*8*	*10*
Per doz.....	*$1.00*	*1.40*	*1.65*

Cast Iron Flat Shutter, Jap'd., Brass Knobs:

Inch.....	*6*	*8*	*10*
Per doz.....	*$0.75*	*.95*	*1.25*

Wrought Barrel Japd..80@80&10%
Barrel Bronzed.....60&10%
Spring .....70&10@70&10&10%
Shutter .....50&5@50&10&5%
Square Neck.....75@75&10%
Square .....70&10&10%
Ives' Patent Door.....55%
Ives' Wrought Metal.....45%

Expansion—

Richards Mfg. Co.....50&10%
Steward & Romaine Mfg. Co.
Style No. 13, Double.....55%
Style No. 1, Single.....55%
Style No. 100, Dbl. Jaw, Single..50%
Lag Screw.....66⅔%

Plow and Stove—

Plow .....65&5@—%
Stove .....85@85&5%

Tire—

Common Iron.....80%
Norway Iron.....80%
American Screw Company:
Norway Phila., list Oct. 16, '84...80%
Eagle Phila., list Oct. 16, '84....82½%
Bay State, list Dec. 28, '99.....80%
Franklin Moore Co.:
Norway Phila., list Oct. 16, '84...80%
Eagle Phila., list Oct. 16, '84....82½%
Eclipse, list Dec. 28, '99.....80%
Russell, Burdsall & Ward Bolt & Nut Co.:
Empire, list Dec. 28, '99.....80%
Norway Phila., list Oct., '84.....80%
Eagle 82½%
Shelton Co.:
Tiger Brand, list Dec. 28, '99.....80%
Phila., Eagle, list Oct. 16,1884..82½%
Upson Nut Co.:
Tire Bolts.....72½%

Borers, Bung—

Borers Bung, Ring, with Handle:				
Inch.....	*1¼*	*1½*	*1¾*	*2*
Per doz....	*$4.80*	*5.60*	*6.40*	*8.00*
Inch			*2¼*	*2½*
Per doz.....			*$8.65*	*11.50*

Enterprise Mfg. Co., No. 1, $1.25; No. 2, $1.75; No. 3, $2.50 each.....25%

Boxes, Mitre—

C. E. Jennings & Co.....25%
Langdon, New Langdon and Langdon Improved, 20&10%; Langdon Acme .....15&10%
Perfection 40%
Seavey 45%

Braces—

Common Ball, American....$1.50
Barber's .....50&10&10@60&10%
Fray's Genuine Spofford's.....60%
Fray's No. 70 to 120, 81 to 123, 207 to 414 .....60%
C. E. Jennings & Co.....50&5%
Mayhew's Ratchet.....60%
Mayhew's Quick Action Hay Pat..50%
Millers Falls Drill Braces.....25&10%
P., S. & W. Co., Peck's Pat..60&10%

Brackets—

Wrought Steel.....70&10@75&10%
Bradley Metal Clasp..80&10@80&10&5%
Griffin's Pressed Steel.....75@75&10%
Griffin's Folding Brackets.....70&10%
Taplin Victor Handy Egg Beater Bracket .....₱ doz. $1.50

Bright Wire Goods—

See *Wire and Wire Goods.*

Broilers—

Kilbourne Mfg. Co.....75&20%
Wire Goods Co.....75%

Buckets, Galvanized—

M'f'gr's list, price per gross.

	Quart	*10*	*12*	*14*	
Water, Reg		*25.35*	*28.00*	*32.00*	10&5%
Water, Hvy		*45.35*	*48.00*	*52.00*	
Fire, Rd. Btm		*32.00*	*34.65*	*38.65*	
Well		*37.35*	*41.35*	*45.35*	

Bull Rings—See *Rings, Bull*

Butts—Brass—

Wrought, High List, Oct. 26,'06.55%
Cast Brass, Tiebout's.....40%

Cast Iron—

Fast Joint, Broad....40&10@50%
Fast Joint, Narrow....40&10&50%
Loose Joint.....70&10@75%
Loose Pin.....70&10@75%
Mayer's Hinges.....70@70&10
Parliament Butts.....70@70&10

Wrought Steel—Bright.

Light Narrow, Light Reversible .....70&5%
Reversible and Broad..70&5%
Loose Joint, Narrow, Light Inside Blind, &c.....70%
Back Flaps, Table Chest..65%
Japanned.
Light Narrow, Loose Pin, 40&5%
Light Narrow, Ball Tip..60%
Broad .....40&5%
Steeple Tipped.....70%
Ball Tipped.....70%

Extra 10%

Cages, Bird—

Hendryx Brass: Series 3000, 5000, 1100, net list; 1200, 15%; 200, 300, 900 ..... 30%
Hendryx Bronze; Series 700, 800..30%
Hendryx Enameled..... 35%

Calipers—See *Compasses.*

Calks, Toe and Heel—

Blunt, 1 prong, per lb., 4¼@4¾¢
Sharp, 1 prong, per lb., 4¾@5¼¢
Burke's, Blunt, 4@4¾¢; Sharp, 4½@5¼¢
Lautier, Blunt, 4@4¼¢; Sharp, 4½@4¾¢
Perkins', Blunt, ℔ lb, 3.65¢; Sharp, 4.15¢

Can Openers—

See *Openers, Can.*

Caps, Percussion—

Eley's E. B. ..... $2@55¢
G. D. ..... *per M* $4@35¢
F. L. ..... *per M* $0@42¢
G. E. ..... *per M* $8@50¢
Musket ..... *per M* $2@63¢

Primers—

Berdan Primers, $2 per M..20&5%
Primer Shells and Bullets..15&10%
All other primers per M.$1.52@1.60

Carpet Stretchers—

See *Stretchers, Carpet.*

Cartridges—

Blank Cartridges:

32 C. F., $5.50 ..... *10&5%*
38 C. F., $7.00 ..... *10&5%*
22 cal. Rim, $1.50 ..... *10&5%*
32 cal. Rim, $2.75 ..... *10&5%*
B. B. Caps, Con. Ball, Swgd. $1.90
B. B. Caps, Round Ball *$1.49*
Central Fire *25%*
Target and Sporting Rifle..15&5%
Primed Shells and Bullets.15&10%
Rim Fire, Sporting *50%*
Rim Fire, Military ..... *15&5%*

Casters—

Bed ..... 65&10%
Plate ..... 60&5%
Philadelphia ..... 70&10%
Acme, Ball Bearing 35%
Gem (Roller Bearing) ..... 70&10&10&5%
Steel Gem 20%
Standard Ball Bearing 45%
Yale (Double Wheel) low list..40&10%

Cattle Leaders—

See *Leaders, Cattle.*

Chain, Proof Coil—

American Coil, Straight Link:

3-16	¼	5-16	7-16	½	9-16
$8.65	6.05	4.90	4.25	4.15	4.10
⅝	¾	⅞ to 1	1⅛ to 1¼ inch.		
$4.05	3.95	3.90	4.00		

In cask lots, deduct 25¢.
German Coil ..... 60@60&5%
German Pattern Coil:
6-0 to 1 ..... 70&5@70&10%
2 and 3..60&10&10@60&10&10&5%
4, 5 and 6.....50&10@50&10&5%

Halter—

Halter Chains ..... 60@60&5%
German Pattern Halter Chains, list July 24, '97 ..... 60&10&5%
Covert Mfg. Co.
Halter ..... 35&5%

Cow Ties—

See *Halters and Ties.*

Trace, Wagon, &c.—

Traces, Western Standard: 100 pr.
6½—6-3, Straight, with ring..$28.00
6½—6-2, Straight, with ring..$29.00
6½—8-2, Straight, with ring..$32.00
6½—10-2, Str'ght, with ring..$37.00

NOTE.—Add 2c per pair for Hooks Twist Traces; add per pair for Nos. 2 and 3, 2c; No. 1, 3c; No. 0, 4c to price of Straight Link.

Eastern Standard Traces, Wagon Chain, &c..60&10@60&10&5%

Miscellaneous—

Jack Chain, list July 10, '93:
Iron ..... *60&10%*
Brass *60%*
Safety and Plumbers' Chain, *60&10%*
Gal. Pump Chain....lb., 4½@5%
Covert Mfg. Co.:
Breast, Halter, Heel, Rein, Stallion 40%
Oneida Community:
American Halter, Dog and Kennel Chains ..... 35&2½@40%
Niagara Dog Leads and Kennel Chains ..... 45@50&5%
Wire Goods Co.:
Dog Chain 70%
Universal Dbl.-Jointed Chain..... 50%

Chain and Ribbon, Sash—

Oneida Community:
Steel Chain 60%
Pullman:
Bronze Chain, 60%; Steel Chain, 60&10%
Sash Chain Attachments, per set..8¢
Aluminoy Sash Ribbon, per 100 ft..... $1.25@3.00
Sash Ribbon Attachments, per set..8¢

Chalk—(From Jobbers.)

Carpenters' Blue....gro., 50@55¢
Carpenters' Red.....gro., 45@50¢
Carpenters' White...gro., 40@45¢

Checks, Door—

Bardsley's 45%
Pullman, per gro..... $54.00
Russwin 33⅓%

Chests, Tool—

American Tool Chest Co.:
Boys' Chests, with Tools..... 50%
Youths' Chests, with Tools..... 25%
Gentlemen's Chests, with Tools..25%
Farmers', Carpenters,' etc., Chests, with Tools..... 25%
Machinists' and Pipe Fitters' Chests, Empty..... 45%
Tool Cabinets..... 45%
C. E. Jennings & Co.'s Machinists' Tool Chests..... 7½%

Chisels—

Socket Framing and Firmer

Standard List 80%
Buck Bros. 30%
C. E. Jennings & Co.:
Socket Firmer No, 10..... 25&7½%
Socket Framing No. 15..... 25&7½%
Swan's ..... 66⅔@70%
L. & I. J. White Co..... 30@30&5%

Tanged—

Tanged Firmers..... *30&5@35%*
Buck Bros. 30%
C. E. Jennings & Co. Nos. 191, 181..25%
L. & I. J. White Co..... 25&5%

Cold— lb.

Cold Chisels, good quality..13@15¢
Cold Chisels, fair quality..11@12¢
Cold Chisels, ordinary... 9@10¢

Chucks—

Almond Drill Chucks..... 35%
Almond Turret Six-Tool Chuck..... 40%
Beach Pat., each $8.00..... 35&5%
Empire 25%
Blacksmiths' 25%
Jacobs' Drill Chucks..... 35%
Pratt's Positive Drive..... 25%
Skinner Patent Chucks:
Independent Lathe Chucks..... 35%
Universal, Reversible Jaws..... 35%
Combination, Reversible Jaws..... 35%
Drill Chucks, New Model, 25%; Standard, 45%; Skinner Pat., 25%; Positive Drive..... 40%
Planer Chucks..... 30%
Face Plate Jaws..... 35%
Standard Tool Co.:
Improved Drill Chuck..... 45%
Union Mfg. Co.:
Combination, Nos. 1, 2, 3, 4, 5, 6, 7, 8 and 17, 40%; No. 21..... 35%
Scroll Combination, Nos, 83 and 84 ..... 30%
Geared Scroll, Nos. 33, 34 and 35..25%
Independent Iron, Nos. 18 and 318 35%
Independent Steel, No. 64..... 25%
Union Drill, Nos. 000, 00, 100, 101, 102, 103, 104..... 35%
Union Czar Drill..... 25%
Universal, 11, 12, 16, 17, 13, 14, 15..40%
Universal, No. 42..... 35%
Iron Face Plate Jaws, Nos. 28, 30, 48 and 50..... 35%
Steel Face Plate Jaws, Nos. 70 and 72 ..... 30%
Westcott Patent Chucks:
Lathe Chucks..... 50%
Little Giant Auxiliary Drill..... 50%
Little Giant Double Grip Drill..50%
Little Giant Drill, Improved..... 50%
Oneida Drill..... 50%
Scroll Combination Lathe..... 50%
Whitaker Mfg. Co.:
National Drill..... 25%

Clamps—

Adjustable, Hammers'..... 20@20&5%
Carriage Makers', P., S. & W. Co. ..... 50&10%
Besly, Parallel..... 33⅓&10%
Myers' Hay Rack..... 45%
Lineman's Swedish Neverturn..... 65%
Wood Workers, Hammers'..... 40&10%
Saw Clamps, see Vises, Saw Filers'.

Cleaners, Drain—

Iwan's Champion, Adjustable..... 50%
Iwan's Champion, Stationary..... 40%

Sidewalk—

Star Socket, All Steel..℔ doz. $4.05 net
Star Shank, All Steel..℔ doz. $3.24 net
W. & C. Shank, All Steel, ℔ doz., 7½ in., $3.00; 8 in., $3.25.

Cleavers, Butchers'—

Foster Bros..... 30%
Fayette R. Plumb..... 30%
L. & I. J. White Co..... 30%

Clippers, Horse and Sheep—

Chicago Flexible Shaft Company:
1902 Chicago Horse, each..$10.75
20th Century Horse, each..$5.00
Lightning Belt Horse, each.$15.00
Chicago Belt Horse, each.$20.00
Stewart's Enclosed Gear Horse, each..... $6.75
Stewart's Patent Sheep Shearing Machine, each..... $12.75
Stewart Enclosed Gear Shearing Machine, No. 8, each..$9.75

Clips, Axle—

Regular Styles, list July 1, '05, *80&6&10%*

Cloth and Netting, Wire

—See *Wire, &c.*

Cocks, Brass—

Hardware list:
Plain Bibbs, Globe, Kerosene, Racking, Liquor, Bottling, &c. ..... *70@—%*
Compression Bibbs..60&10@—%

Coffee Mills—

See *Mills, Coffee.*

Collars, Dog—

Nickel Chain, Walter B. Stevens & Son's list..... 40%
Leather, Walter B. Stevens & Son's list 40%

Compasses, Dividers, &c.

Ordinary Goods..... *70&10@75%*
Wm. Schollhorn Co.:
Excelsior Dividers..... 60%
Lodi Dividers..... 70&10%

Conductor Pipe,—

L. C. L. to Dealers:

	Galvanized		
Galv. Steel.	*Charcoal Iron.*	*Copper. 14, 16&20 oz.*	
Eastern:			
70%	*50&17½%*	*45%*	
Central:			
70&5%	*55%*	*45%*	
Western and Southern:			
65&10%	*50&2½%*	*40&5%*	
So. Western			
65&5%	*45&5%*	*40&2½%*	

Terms, 60 days; 2% cash 10 days. Factory shipments generally delivered.

See also Eave Troughs.

Coolers, Water—

L. & G. Mfg. Co.:

Gal.	2	3	4	6	8
Galvanized, ea.	$1.85	$2.00	$2.25	$2.90	$3,90

Galvanized, Lined, side handles,

Gal.	2	3	4	6	8
Each	$1.95	$2.15	$2.40	$3.30	$4.15

White Enameled..... 10%
Agate Lined..... 10%

Coopers' Tools—

See *Tools, Coopers'.*

Coppers' Soldering—

Soldering Coppers, 3 lbs. to pair and heavier, 24@27¢; lighter than 3 lb. to pair.....26@29¢

Cord— Sash—

Braided, Drab..... *lb. 35¢*
Braided, White, Com., Nos. 8 to 12, 23¢; No. 7, 23½¢; No. 6, 24½¢. In lots of 12 doz. or over, 1 cent less per pound.
Cable Laid Italian, lb., No. 18..37¢
Italian, lb., A, No. 18, 25¢; B, 22¢
Common India..... *lb., 11@11½¢*
Cotton Sash Cord, Tw'ted.18@20¢
Patent Russia..... *lb...20¢*
Cable Laid Russia..... *lb...21¢*
India Hemp, Br'd'..... *lb...21¢*
India Hemp, Twisted..lb.13@14¢
Patent India, Twisted...lb...17¢
Pearl Braided, cotton, No. 6, ℔ lb 27½¢; No. 7, 26½¢; Nos. 8 to 12, 26¢
Eddystone, Braided, Nos. 8 to 12, 26¢; 7, 26½¢; 6, 27½¢.
Harmony Cable Laid Italian, Nos. 7 to 10..... ℔ lb 23 ¢
Pullman:
Wire Sash Cord..... 10%
Sash Cord Attachments, per doz. 10¢
Samson, Nos. 6 to 12:
Braided, ℔ lb., Drab Cotton, 55¢; Italian Hemp, 40¢@50¢; Linen, 65¢; White Cotton, 50¢; Spot Cord..... 50¢ — 15%
Massachusetts, White..... ℔ lb 40¢
Massachusetts, Drab..... ℔ lb 45¢
Phoenix, White, Nos. 8 to 12, 27¢;
Silver Lake, per lb.:
A, Drab, 45¢; A, White, 40¢;
B, Drab, 40¢; B, White, 35¢;
Italian Hemp, 40¢; Linen....57½¢
See also Chain and Ribbon.

Wire, Picture—

List July 10, 1906..... *90@—%*
Hendryx Standard Wire Picture Cord, old list, 85&10%
Turner & Stanton Co. Wire Picture Cord ..... 85&10%

Cradles—

Grain ..... *40&12½%*

Crayons—

White Round Crayons, Cases, 100 gro., $6.50@$7.50 at factory, but lower prices made by jobbers
Zelnicker's Lumber. ℔ gro, White and Purple, Indelible....$7.50
Blue, Red, Green, Yellow and Terra Cotta, $6.50; Black.....$4.50
Giant Lumber, 5¼ in. x 15-16 in. round, all colors, $12.00; Indelibles, $14.00; Blacks.....$10.00
Genuine Soapstone, Metal Workers', 5 in. x ¼ in. Round, $2.50; 5 in. x ¼ in. Square, $1.75; 5 x ⅛ x 3-16, $2.50; 5 x 1¼ x 3-16.....$3.00

Crooks, Shepherds'—

Fort Madison, per doz., Heavy, $5.50; Light $5.00

Crow Bars—See *Bars, Crow.*

Cultivators—

Victor Garden..... 50%

Cutlery, Table—

International Silver Company:
No. 12 M'd'm Knives, 1847, ℔ doz. $3.50
Star, Eagle, Rogers & Hamilton and Anchor ..... ℔ doz. $3.00
Wm. Rogers & Son..... ℔ doz. $2.50

Cutters— Glass—

H. H. Mayhew Co..... 40%
Red Devil..... 60%
B. Mfg. Co..... 40%
Woodward 50%

Meat and Food—

American 30%

Nos.	401	402	403	404	405	406	407
Each	$5	$7	$10	$12	$25	$50	$60

Enterprise:

Nos.	5	10	12	22	32
Each	$2	$3	$2.75	$4.50	$6

25@25&7½%
No. 202, $1.50..... 40&7½%
P., S. & W. Co.:
Dixon's ..... ℔ doz. 33⅓%

Nos...	1	2	3	4
	$14.00	$17.00	$19.00	$30.00

Ideal ..... 40@40&5%
Hales ..... 60&10&5%
Little Giant..... ℔ doz. 40@50%

Nos..	305	310	312	320	322
	$35.00	$48.00	$44.00	$72.00	$68.00

New Triumph No. 605, ℔ doz, $24.00, 40&10%
Russwin Food, No. 1, $24.00; No. 2, $27.00 ..... 45&10&10%
$15.00 $18.00
Enterprise Beef Shavers..... 25@30%

Slaw and Kraut—

Henry Disston & Sons:
Slaw and Kraut Cutters..... 35%
Corn Graters..... 30%
J. M. Mast Mfg. Co.:
Slaw Cutters, 1 Knife....℔ doz. $3.00
Combined Slaw Cutter and Corn Grater ..... ℔ doz. $4.00

Tobacco—

All Iron, Cheap..doz. $4.25@$4.50
Enterprise ..... 25@30%
National, ℔ doz., No. 1, $21; No. 2, $18 ..... 40%

Diggers, Post Hole, &c.—

Disston's:
Rapid, ℔ doz., $24.00..... 25%
Samson, ℔ doz., $34.00..... 25%
Iwan's Imp'ved Post Hole Auger..40%
Vaughan Pattern Post Hole Augers, ℔ doz., $7.00
Perfection Post Hole Diggers, ℔ doz. $8.75
Split Handle Post Hole Diggers, ℔ doz., $7.75
Hercules Pattern, ℔ doz.....$10.00
Kohler's, ℔ doz., Universal, $15.00; Little Giant, $12.00; Hercules, $10.00; Invincible, $9.00; Rival, $8.50; Pioneer..... $7.50
Never-Break Post Hole Diggers, ℔ doz., $24.00..... 60%

Dividers—See *Compasses.*

Drawing Knives—

See *Knives, Drawing.*

Dressers, Emery Wheel—

Sterling Emery Wheel Dressers.....35%
Sterling Wheel Dresser Cutters.....35%

Drills and Drill Stocks—

Blacksmiths' Common Drilling Machines ..... *$1.50@$1.75*
Breast, Millers Falls..... 15&10%
Breast, P., S. & W..... 33⅓%
Goodell Automatic Drills.50&10@60&10%
Millers Falls Automatic Drills.33⅓&10%
Ratchet, Curtis & Curtis..... 25%
Ratchet, Parker's..... 40%
Ratchet, Weston's..... 40%
Ratchet, Weston's, Style H Improved 40%
Ratchet, No. 912..... 40%
Ratchet, Celebrated..... 40%
Ratchet, Whitney's, P., S. & W., 50&5%
Whitney's Hand Drill, No. 1, $10.00; Adjustable, No. 10, $12.00..... 33⅓%

Twist Drills—

Bit Stock..... *60&10&10@70%*
Taper and Straight Shank.... *60&10@60&10&5%*

Drivers, Screw—

Screw D'ver Bits, per doz..45@50¢
Balsey's Screw Holder and Driver, ℔ doz., 2½-in., $6; 4-in., $7.50; 6-in. ℔ 50%
Buck Bros.' Screw Driver Bits..... 30%
Champion 50%
Disston's 70%
Fray's Hol. H'dle Sets, No. 3, $12..50%
Ford's Brace Screw Drivers....40&10%
Gay's Double Action Ratchet..... 35%
Goodell's Auto..... 65@65&10%
Mayhew's Black Handle..... 40%
Mayhew's Monarch..... 40%
Millers Falls, Nos. 20 and 21....25&10%
Millers Falls, Nos. 11, 12, 41, 42..15&10%
Smith & Hemenway Co., Neverturn, 66⅔%; Elmora, 60%; Star, 30&10%
Swan's:
Nos. 7365 to 7368, 50%; No. 7340, 40&10%

Eave Trough, Galvanized—

Territory.	*L. C. L. Galvanized*	
Galv. Steel.	*Charcoal Iron.*	*Copper. 14, 16&20 oz.*
Eastern:		
75&5%	*60&10%*	*45%*
Central:		
75&10%	*65%*	*45%*
Western and Southern:		
75%	*60&5%*	*40&5%*
So. Western:		
70&10%	*55&7½%*	*42½%*

Terms,—2% for cash. Factory shipments generally delivered.

Note.—Lower prices are made in some sections.

See also Conductor Pipe and Elbows.

Elbows and Shoes—

Factory shipments, all territories:
Galv. Steel and Galv. C. I.
Standard Gauge....85@85&10%
No. 26..... *50%*
No. 24..... *25%*
No. 22 ..... *10%*
Copper ..... *50&10%*

Elbows, Stove Pipe—

Edwards, Standard Blue.....40&10&10%
Edwards, Royal Blue.....40&10&10%
Reeves, Dover, one piece.....40&10%

Emery, Turkish—

	½ to 4/6:	⅝ to 220:	Flour.
Kegs ..... *lb.*	5 ¢	5½¢	5½¢
½ Kegs..... *lb.*	5½¢	5¾¢	5¾¢
¼ Kegs..... *lb.*	5½¢	6 ¢	4 ¢
10-lb. cans, 10 in case....6½¢	7 ¢	6 ¢	
10-lb. cans, less than 10.....	10 ¢	10 ¢	8 ¢
Less quantity..	10 ¢	10 ¢	8 ¢

NOTE.—In lots 1 to 3 tons a discount of 10% is given.

Extractors, Lemon Juice
—See *Squeezers, Lemon.*

Fasteners, Blind—
Zimmerman's .....50&10%
Walling's .....40&10%
Upson's Patent.....40%

Cord and Weight—
Ives and Titan.....33⅓%

Corrugated—
Acme Corrugated Fasteners.....70%

Faucets—
Cork Lined.....50&10@60%
Metallic Key, Leather Lined, 60&10@70%
Red Cedar.....40&5@40&10&5%
Petroleum.....70&10@75%
B. & L. B. Co.:
Metal Key.....60&10%
Star 60%
West Lock.....60&10%
John Sommer's Peerless Tin Key....40%
John Sommer's Boss Tin Key.....50%
John Sommer's Victor Mtl. Key.50&10%
John Sommer's Duplex Metal Key..60%
John Sommer's Diamond Lock.....40%
John Sommer's I. X. L. Cork Lined...50%
John Sommer's Reliable Cork Lined... 50&10%
John Sommer's Chicago Cork Lined.60%
John Sommer's O. K. Cork Lined...50%
John Sommer's No Brand, Cedar....50%
John Sommer's Perfection, Cedar....40%
Self Measuring:
Enterprise, ℔ doz. $36.00.....40&10%
Lane's, ℔ doz. $36.00.....40&10%
National Measuring, ℔ doz. $36.40&10%

Felloe Plates—
See *Plates, Felloe.*

Files— Domestic—
List Nov. 1, 1899.
Best Brands.....70&10@75&10%
Standard Brands.....75&10@80%
Lower Grade...75&10&10@80&10%

Imported—
Stubs' Tapers, Stubs' list, July 24, '97.....33 1-3@40%

Fixtures, Fire Door—
Allith Underwriters' Approved.....50%
Richards Mfg. Co.:
Universal, No. 103; Special, No. 104.....$3.75
Fusible Links, No. 98.....50%
Expansion Bolts, No. 107.....60&10%

Grindstone—
Net Prices:

Inch	15	17	19	21
Per doz.	$3.60	3.85	4.15	4.65

P., S. & W. Co.....25%
Reading Hardware Co.....60%

Fodder Squeezers—
See *Compressors.*

Forks—
NOTE.—Manufacturers are selling from the list of September 1, 1904, but many jobbers are still using list of August 1, 1899, or selling at net prices.
Iowa Dig-Ezy Potato.....60&10%
Victor, Hay.....60&15&2½%
Victor, Manure.....60%
Victor, Header.....60%
Champion, Hay.....60%
Champion, Header.....60%
Champion, Manure.....60&15&2½%
Columbia, Hay.....60&20%
Columbia, Manure.....70%
Columbia, Spading.....70&12½%
Hawkeye Wood Barley.....40%
W. & C. Potato Digger.....60&10%
Acme Hay.....60&20%
Acme Manure, 4 tine.....60&10&5%
Dakota Header.....60&20%
Jackson Steel Barley.....60&20%
Kansas Header.....65%
W. & C. Favorite Wood Barley.....40%
Plated.—See Spoons.

Frames— Wood Saw—
White, S'g't Bar, per doz.75@80¢
Red, S'g't Bar, per doz..$1.00@1.25
Red, Dbl. Brace, per doz.$1.40@1.50

Freezers, Ice Cream—

Qt.	1	2	3	4	6
Each	$1.25	$1.60	$1.90	$2.20	$2.80

Fruit and Jelly Presses—
See *Presses, Fruit and Jelly.*

Fry Pans—See *Pans, Fry.*

Fuse— *Per 1000 Feet.*
Hemp.....$2.75
Cotton.....3.20
Waterproof Sgl. Taped..3.65
Waterproof Dbl. Taped..4.40
Waterproof Tpl. Taped..5.15
} 25&10%

Gates, Molasses and Oil—
Stebbins' Pattern.....75@80%

Gauges—
Marking, Mortise, &c..50@50&10%
Chapin-Stephens Co.:
Marking, Mortise, &c.....50&50&10%
Disston's Marking, Mortise, &c..67½%
Wire, Brown & Sharpe's.....33⅓%
Wire, Morse's.....25%
Wire, P., S. & W. Co.....33⅓%

Gimlets— Single Cut—
Numbered assortments, per gro.
Nail, Metal, No. 1, $2.00; 2, $2.30
Spike, Metal, No. 1, $4.00; 2, $4.30
Nail, Wood Handled, No. 1, $2.30; 2, $2.60
Spike, Wood Handled, No. 1, $4.30; 2, $4.60

Glass, American Window
See *Trade Report.*

Glasses, Level—
Chapin-Stephens Co.....65@65&10%

Glue, Liquid Fish—
Bottles or Cans, with Brush..25&10@50%
Elwell's 40%

Grease, Axle—
Common Grade...gro.$6.00@6.50
Dixon's Everlasting, 10-lb pails, ea. 85¢; in boxes, ℔ doz., 1 lb, $1.20; 3 lb.....$2.00
Helmet Hard Oil.....25%

Griddles, Soapstone—
Pike Mfg. Co.....33⅓@33⅓&10%

Grinders—
Royal Mfg. Co.:
Alundum Grinding Machines, each, Nos. 01, $1.75; 1A, $2.50; 10, $5.00 .....30%
Alundum Sickle Grinders, each, Nos. 20, $5.00; 20A, $6.00; 20A, Combined, $6.50.....30%
Alundum Disc Grinders, each, $2.50 .....30%

Grindstones—
Pike Mfg. Co.:
Improved Family Grindstones, ℔ inch, ℔ doz. $2.00.....33⅓%
Richards Mfg. Co., Eli and Cycle, Ball Bearing, mounted.....40%

Grips, Nipple—
Perfect Nipple Grips.....40&10&2%

Halters and Ties—
Cow Ties.....40&5@60&10%
Covert Mfg. Co.:
Web .....30&2%
Jute Rope.....35%
Sisal Rope.....20%
Cotton Rope.....45%
Hemp Rope.....45%
Oneida Community:
Am. Coil and Halters.....40@40&5%
Am. Cow Ties.....45@50%
Niagara Coil and Halters..45@50&5%
Niagara Cow Ties....45&5@50&10&5%

Hammers—
Handled Hammers—
Heller's Machinists'...55&10@55&10&5%
Heller's Farriers'.....40&5@40&10&5%
Peck, Stow & Wilcox Co.:
Crucible Steel.....50%
Farriers' .....40&10&5%
Riveting 50%
Machinists', revised list.....66⅔&5%
Blacksmiths' .....50&5%
Fayette R. Plumb:
A. E. Nail.....40&2½@40&12½%
Eng. and B. S. Hand.50&10&5@60&5%
Machinists' Hammers.....60@60&10%
Rivet and Tinners'.40&7½@40&12½&5%

Heavy Hammers and Sledges—
Under 3 lb., per lb., 50¢...80&10%
3 to 5 lb., per lb., 40¢.....80&10%
Over 5 lb., per lb., 30¢.....
Over 5 lb., per lb., 30¢..80&10&10%

Handles—
Agricultural Tool Handles
Axe, Pick, &c.....60&10@60&10&5%
Hoe, Rake, &c......40%
Fork, Shovel, Spade, &c.:
Long Handles.....40%
D Handles.....40%

Cross-Cut Saw Handles—
Atkins' 40%
Champion 50%
Disston's 50%

Mechanics' Tool Handles—
Auger, assorted...gro.$3.00@$3.50
Brad Awl.....gro.$1.65@$1.75
Chisel Handles, Ass'd, per gro.:
Tanged Firmer, Apple, $2.40@ $2.65; Hickory.....$2.15@2.40
Socket Firming, Apple, $1.75@ $1.95; Hickory....$1.60@$1.75
Socket Framing, Hickory, $1.60@$1.75
File, assorted.....gro. $1.30@$1.40
Hammer, Hatchet, &c. 60&10@60&10&5%
Hand Saw, Varnished, doz. 80&85¢; Not Varnished...65@75¢
Plane Handles:
Jack, doz. 30¢; Jack, Bolted 75¢
Fore, doz. 45¢; Fore, Bolted 90¢
Chapin-Stephens Co.:
Carving Tool.....30@30&10%
Chisel .....60@60&10%
File and Awl.....60@60&10%
Saw and Plane.....30@30&10%
Screw Driver.....30@30&10%
Millers Falls Adj. and Ratchet Auger Handles .....15&10%
Nicholson Simplicity File Handle.... ℔ gro. $0.85@$1.50
W. A. Zelnicker Supply Co.:
Hammer, ℔ doz., 12 in., $2.00; 14 in., $2.00; 16 in., $2.30; 18 in., $2.50; 20 in., $2.70; 22 in., $3.00; 24 in., $3.30; 26 in., $3.50; 30 in., $3.80.
Sledge, ℔ doz., oval, 30 in., $3.80; octagon, 30 in., $3.80; oval, 36 in., $4.00; octagon, 36 in., $4.00.
Axe, ℔ doz., 28 to 34 in., $5.60; 36 in., $5.80.
Adze, ℔ doz., 36 in., $5.80; 36 in., $7.80.
Pick, ℔ doz., R. R., 36 in., $8.00; coal, 34 in., $5.80.
Hatchet, ℔ doz., 12 to 14 in., $2.00.
} 20%

Hangers—
NOTE.—Barn Door Hangers are generally quoted per pair, without track, and Parlor Door Hangers per double set with track, &c.
Allith Mfg. Co.:
Reliable, Nos. 1 and 2; Allith, No. 3; Allith Adjustable, No. 6; Reliable Parlor Door.....50%
Chicago Spring Butt Co.:
Friction 25%
Oscillating 25%
Big Twin.....25%
Chisholm & Moore Mfg. Co.:
Baggage Car Door.....50%
Elevator 30%
Railroad 50%
Cronk & Carrier Mfg. Co.:
Loose Axle.....60&2½%
Roller Bearing.....70&2½%
Griffin Mfg. Co.:
Solid Axle, No. 10, $12.00..60&10%
Roller Bearing, No. 11, $15.00, 60&10%
Roller Bearing, Ex. Hy., No. 22, $18.00.....60&10%
Bull Dog, $24.00.....70%
Lane Bros. Co.:
Parlor, Ball Bearing, $4.00; Standard, $3.15; No. 105, $2.85; New Model, $2.80; New Champion $2.25
Barn Door, Standard.....60&10%
Hinged .....net $6.08
Covered .....60&5%
Special .....70&5%
Lawrence Bros.:
Advance .....55&10%
Cleveland .....70&7½%
Clipper, No. 75.....60%
Crown .....55&10%
Cyclone, No. 40.....net $6.50
Tandem, No. 50.....net $7.50
New York.....55&10%
McKinney Mfg. Co.:
Roller Bearing, Nos. 1 and 2.70%
Anti-Friction 60%
Hinged Hangers, King Charm.60%
Richards Mfg. Co.:
Hangers, Nos. 47, 48, 147, 247, 60&5%
Pioneer Wood Track, No. 3..$2.25
Roller B'r'g St'l Track No. 12.$2.20
Roller B'r'g St'l Track No. 13.$2.50
Roller B'r'g, Nos. 39, 41, 43, 70&7½%
Hero, Adj. Track No. 19..50&10%
Adjustable Track Tandem Trolley Track No. 16.....50&10%
Seal, Steel Track No. 8.....$2.25
Auto Adj. Track No. 22.—50&5%
Trolley B. D. No. 17, $1.25; F. D. No. 120, $2.25; No. 121, $2.45; No. 150.....$2.50
Safety Underwriters F. D. No. 101 .....50%
Tandem No. 41..2½ and 3 60&10%
Palace, Adjustable Track No. 122 .....50&5%
Royal, Adjustable Track No. 122 .....50&10%
Ives' Wood Track No. 1.....$2.25
Trolley B. D. No. 20.....50&10%
Trolley B. D. No. 24, $1.30; No. 27, $1.40; No. 28.....$1.60
Roller Bearings, Nos. 37, 38, 39, 41, 43, 44, Sizes 1 and 2.70&7½%
Anti-friction, No. 42; No. 44, sizes 2½ and 3.....60%
Hinged Tandem No. 48....65&5%
Folding Door B. B. Swivel No. 136 .....40%
Taylor & Boggis F'y Co.'s Kidder's Roller Bearing.50&15&10&5%
Myers' Stayon Hangers.....60%
} Extra 10&10% often given.

Hangers— Garment—
Pullman Trouser, ℔ gro., 1 pair Flat Aluminoy, $9.00; 1 pair Round Nickeled, $9.00; 4 pair Round Nickeled, $27.00; 1 pair Flat Gun Metal, $12.00; 1 pair Flat Black Enameled, $7.50; 1 pair Wood Clamp, $13.50; Skirt Hangers, Folding, per gro., $21.00; Coat Hangers, Folding, per gro., $8.00; Garment Hanger Rods, Round Nickeled, per gro., $10.50; Garment Hanger Loops, Round Nickeled, per gro.....$10.50
Victor Folding.....℔ gro. $9.00

Gate—
Myers' Patent Gate Hangers, ℔ doz. net $4.50

Joist and Timber—
Lane Bros. Co.....30%

Hasps—
Griffin's Security Hasp.....50&10%
McKinney's Perfect Hasp, ℔ doz..60%

Hatchets—
Regular list, first qual..40&2½&—
Second quality.....50&5&—

Heaters, Carriage—
Clark, No. 5, $1.75; No. 5B, $2.00; No. 3, $2.25; No. 3D, $2.75; No. 7D, $3.00; No. 3E, $3.25; No. 1, $3.50.....25%
Clark Coal, ℔ doz., $0.75.....20%

Hinges—
Blind and Shutter Hinges
Surface Gravity Locking Blind: (Victor; National; 1868 O. P.; Niagara; Clark's O. P.; Clark's Tip; Buffalo.)

No.	1	3	5
Doz. pair	$0.75	1.35	2.70

Mortise Shutter: (L. & P., O. S., Acme, &c.)

No.	1	1½	2	2½
Doz. pair	$0.70	.65	.60	.55

Mortise Reversible Shutter (Buffalo, &c.):

No.	1	1½	2
Doz. pair	$0.70	.65	.60

North's Automatic Blind Fixtures, No. 2, for Wood, $9.00; No. 3, for Brick, $11.50.....10%
Charles Parker Co.....70@75%
Parker Wire Goods Co.:
Hale & Benjamin Automatic Blind Hinges 20%
Hale's Blind Awning Hinges, No. 110, for wood, $9.00; No. 111, for brick, $9.00.....20%
Reading's Gravity.....60%
Stanley's Steel Gravity Blind Hinges, No. 1647½, ℔ doz. sets, without screws, $0.95; with screws, $1.25.
Wrightsville Hardware Co.:
O. S., Lull & Porter.....75&5%
Acme, Lull & Porter.....75%
Queen City Reversible.....75%
Shepard's Noiseless, Nos. 60, 65, 85 .....75&5%
Niagara, Gravity Locking, Nos. 1, 3 & 5.....75&5%
Tip Pat'n, No. 1.....75&10%
No. 3.....75&5%
Buffalo Gravity Locking, Nos. 1, 3 & 5.....70&10&5%
Shepard's Double Locking.....75%
Champion Gravity Locking.....75&5%
Pioneer .....75&10%
Empire 65%
W. H. Co.'s Mortise Gravity Locking, No. 2.....60&10%

Gate Hinges—
Clark's or Shepard's—Doz. sets:

No.	1	2	3
Hinges with L't'chs.	$2.00	2.70	5.00
Hinges only	1.40	2.05	3.80
Latches only	.70	.70	.85

New England:
With Latch.....doz. ...@$2.00
Without Latch...doz. ...@$1.60
Reversible Self-Closing:
With Latch.....doz. ...@$1.75
Without Latch...doz. ...@$1.35
Western:
With Latch.....doz. $1.75
Without Latch.....doz. $1.15
Wrightsville Hardware Co.: Shepard's or Clark's Hinges and Latches, Hinges only or Latches only, Nos. 1, 2 or 3.....70%

Pivot Hinges—
Bommer Bros. Pivot.....40%
Lawson Mfg. Co. Matchless.....50%

Spring Hinges—
Holdback, Cast Iron...$6.75@$7.00
Non-Holdback, Cast Iron$6.50@$6.75
J. Bardsley:
Bardsley's Non-Checking Mortise Floor Hinges.....40%
Bardsley's Patent Checking.33⅓%
Bommer Bros.:
Bommer Ball Bearing Floor..40%
Bommer Spring Hinges.....40%
No. 999 Wrot. Steel Hold Back, ℔ gr. $9.00
Chicago Spring Butt Co.:
Chicago Spring Hinges.....25%
Triple End Spring Hinges....50%
Chicago (Ball Bearing) Floor..50%
Garden City Engine House....25%
Keene's Saloon Door.....25%
Columbian Hardware Co.:
Acme, Wrought Steel.....30%
Acme, Brass.....25%
American 30%
Columbia, ℔ gr., No. 14, $9.00; No. 18, $25.00
Columbia, Adj., No. 7, ℔ gr. $12.00
Columbian Hinges.....60&10%
Gem, new list.....30%
Clover Leaf.....℔ gr. $12.00
Oxford, new list.....30%
Floor Spring Hinges.....65&10%
Lawson Mfg. Co. Matchless....30%
Richards Mfg. Co.:
Superior Double Acting Floor Hinges 40%
Shelby Spring Hinge Co.:
Buckeye All Steel Holdback Screen Door.....℔ gr. $9.00
Chief Ball Bearing Floor Hinge 50%
Ball Bearing Door.....25%
No. 177, Sheet Steel Holdb'k, ℔ gr. pr.....$9.00
Superior Spring Hinge Co.:
Superior Floor Hinges.....33⅓%
} Extra 10% often given on most of these Hinges.

Wrought Iron Hinges—
Strap and T Hinges, &c., list December 20, 1904:
Light Strap Hinges..50&10%
Heavy Strap Hinges..60&5%
Light T Hinges.....50%
Heavy T Hinges.....40%
Extra Hvy. T Hinges.50&10%
Hinge Hasps.....33⅓%
Cor. Heavy Strap...60&5%
Cor. Ex. Heavy T...50&10%
} Extra 10&7½%.

Screw Hook and Strap.
6 to 12 in...lb. 3½¢
14 to 20 in...lb. 3½¢
22 to 36 in...lb. 3½¢

Screw Hook and Eye:
¾ to 1 inch.....lb. 6½¢
⅝-inch.....lb. 7½¢
½-inch.....lb. 8½¢

Hitchers, Stall—
Covert Mfg. Co., Stall Hitchers..30&2%

Hods— Coal—
M'f'gr's list, price per gross.

Inch	15	16	17	18
Galv. Open	$35	$39	$42	$46
Jap. Open	26	28	31	35
Galv. Funnel	43	48	52	56
Jap. Funnel	33	36	39	43

} 10&5%

Masons' Etc.
Cleveland Wire Spring Co.:
Steel Brick, No. 162.....each $1.05
Steel Mortar, No. 158.....each $1.35

Hoes— Eye—
Scovil and Oval Pattern.....60&10@60&10&10%
Grub, list Feb. 23, 1899.....70&10@75&10%

D. & H. Scovil.....27½%
Am. Fork & Hoe Co. (Scovil Pattern) 60%

Handled—

NOTE.—Manufacturers are selling from the list of September 1, 1904, but many jobbers are still using list of August 1, 1899, or selling at net prices.

Cronk's Weeding, No. 1, $2.00; No. 2, $2.50
Star Double Bit.....$3.20
Ft. Madison Cotton Hoe....70&10&10%
Ft. Madison Crescent Cultivator Hoe, ₩ doz.....70&10%
Ft. Madison Mattock Hoes:
Regular Weight.....₩ doz. 40&5%
Junior Size.....₩ doz. $4.00
Ft. Madison Sprouting Hoe, ₩ doz., 60&10%
Ft. Madison Dixie Tobacco Hoe..... 75&10&7½%
Kretsinger's Cut Easy.....70&10%
Warren Hoe.....45&10%
W. & C. Ivanhoe.....75&2%
B. B. 6 in., Cultivator Hoe.....$3.40
B. B., 6½ in.....$3.50
Acme Wedding.....₩ doz., net, $4.35
W. & C. L'tning Shuffle Hoe, ₩ doz. $5.25

Hoisting Apparatus—

See *Machines, Hoisting.*

Holders— Bit—

Angular, ₩ doz. $24.00.....45&10%

Door—

Bardsley's, Iron, 40%; Brass and Bronze 25%
Empire 50%
Pullman 35%
Richards Mfg. Co.: No. 117, Ever-ready, 40%; Nos. 118, 119, Sure Grip 50%
Superior 33⅓%

File and Tool—

Nicholson File Holders and File Handles .....33⅓&40%

Fruit Jar—

Triumph Fruit Jar Holder, ₩ gross, $10.80; ₩ doz.....$1.25

Trace and Rein—

Fernald Double Trace Holder, ₩ doz. pairs $1.25
Dash Rein Holder, ₩ doz. pairs..$1.25

Hones—Razor—

Pike Mfg. Co., Belgian and Swaty, 50%; German.....33⅓%

Hooks—Cast Iron—

Bird Cage, Reading.....40%
Clothes Line, Reading List.....40%
Coat and Hat, Reading.....45&20%
Coat and Hat, Wrightsville.....60&5%
Harness, Reading List.....40%

Wire—

Belt 80%
Wire C. & H. Hooks.....75@—%
Bradley Metal Clasp Wire, Coat and Hat, 70&10%; Ceiling.....70&10%
Columbian Hdw. Co., Gem.....70&5%
Parker Wire Goods Co., King..70&10%
Wire Goods Co.:
Acme, 60&10%; Chief, 70%; Crown, 75%; Czar, 65%; V Brace, 75%; Czar Harness, 50&10%.

Wrought Iron—

Box, 6 in., per doz., $1.00; 8 in., $1.25; 10 in., $2.50.
Cotton .....*doz. $1.05@$1.25*
Wrought Staples, Hooks, &c.—
See Wrought Goods

Miscellaneous—

Hooks, Bench, see *Stops, Bench.*
Rush, Light, doz., $6.20; Medium, $6.75; Heavy, $7.65
Grass, best, all sizes, per doz.$3.00
Grass, common grades, all sizes, per doz.....$1.50
Whiffletree .....*lb. 5¾@6¢*
Hooks and Eyes:
Brass .....*60@60&10%*
Malleable Iron.....*70@70&10%*
Coe's Mfg. Co. Gate and Scuttle Hooks 40%
Ft. Madison Cut-Easy Corn Hooks, ₩ doz. $3.25 net
Turner & Stanton Co. Cup and Shoulder .....80&10%
Bench Hooks—See Bench Stops.
Corn Hooks—See Knives, Corn.

Horse Nails—

See *Nails, Horse.*

Horseshoes—

See *Shoes, Horses.*

Hose, Rubber—

Garden Hose, ¾-inch:
Competition .....*ft. 5@ 6¢*
3-ply Guaranteed.....*ft. 8@ 9¢*
4-ply Guaranteed.....*ft. 10@11¢*
Cotton Garden, ¾-in., coupled:
Low Grade.....*ft. 8@ 9¢*
Fair Quality.....*ft. 10@11¢*

Irons— Sad—

From 4 to 10.....*lb. 3@3½¢*
B. B. Sad Irons.....*lb. 3¼@3½¢*
Mrs. Potts', cents per set:

	Nos. 50	55	60	65
Jap'd Tops	83	80	93	91
Tin'd Tops	88	85	98	95

New England Pressing..lb.3¾@4¢

Bar and Corner—

Richards Mfg. Co., Bar, 60&10%; Corner 60%

Pinking—

Pinking Irons.....*doz.60¢*

Irons, Soldering

See *Copiers.*

Jacks, Wagon—

Covert Mfg. Co.:
Auto Screw.....30&2%; Steel, 45%
Lockport 50%
Lane's Steel.....30&5%
Richards' Tiger Steel, No. 130...50&10%
Smith & Hemenway Co.'s.....35%

Ladder—

Richards Mfg. Co., Ladder Jacks..50%

Kettles—

Brass, Spun, Plain.....*20@25%*
Enameled and Cast Iron—See Ware, Hollow.

Knives—

Butcher, Kitchen, &c.—

Foster Bros.' Butcher, &c.....30%
Wilkinson Shear & Cutlery Co.....60%

Corn—

Columbian Cutlery Co., Wilcut Brand Knives and Hooks.....60%
Withington Acme, ₩ doz., $2.65; Dent, $2.75; Adj. Serrated, $2.20; Serrated, $2.10; Yankee No. 1, $1.50; Yankee No. 2, $1.15.

Drawing—

Standard List.....80%
C. E. Jennings & Co., Nos. 45, 46, 25&7½%
Jennings & Griffin, Nos. 41, 42, 66⅔&7½%
Swan's .....66⅔@70%
Watrous 16⅔%
L. & I. J. White.....20&5@25%

Hay and Straw—

Serrated Edge, per doz. $5.50@5.75
Iwan's Sickle Edge.....₩ doz. $9.50
Iwan's Serrated.....₩ doz. $10.00

Miscellaneous—

Farriers' .....*doz. $3.00@3.25*
Wostenholm's .....₩ doz. $3.00@3.25

Knobs—

Base, 2½-inch, Birch, or Maple, Rubber Tip.....*gro. $1.25@$1.40*
Carriage, Jap., all sizes..... *gro. 40@45¢*
Door, Mineral.....*doz. 65@70¢*
Door, Por. Jap'd.....*doz. 70@75¢*
Door, Por. Nickel..*doz. $2.05@2.15*
Bardsley's Wood Door, Shutters, &c.15%

Lacing, Leather—

See *Belting, Leather—*

Ladders, Store, &c.—

Allith Mfg. Co., Reliable.....50%
Lane's Store.....25%
Myers' Noiseless Store Ladders....50%
Richards Mfg. Co.:
Improved Noiseless, No. 112.....50%
Climax Shelf, No. 113.....50%
Trolley, No. 109.....50%

Ladles, Melting—

L. & G. Mfg. Co. (low list).....20%
P. S. & W.....40&10%
Reading 60%

Lanterns—Tubular—

Regular, No. 0.....*doz. $4.35@4.50*
Side Lift, No. 0.....*doz. $4.60@4.75*
Hinge Globe, No. 0.doz. $4.60@4.75
Other Styles.....*40@40&10%*

Bull's Eye Police—

3-inch .....*$4.25@4.50*

Latches— Thumb—

Roggin's Latches, with screw.. *doz. 35@40¢*

Door—

Allith Mfg. Co., Reliable and Allegator, 50%; Reliable Cold Storage, 50%
Cronk & Carrier Mfg. Co., No. 101, ₩ doz. $2.90
Richards' Bull Dog, Heavy, No. 125 .....50&5%
Richards' Trump, No. 127.....$1.50

Leaders, Cattle—

Small.....*doz. 50¢; large, 60¢*
Covert Mfg. Co.:
Cotton, 45%; Hemp, 45%; Jute, 35%; Sisal, 20%.

Leathers, Pump—

See *Pumps—*

Lifters, Transom—

R. & E.....10%

Lines—

Wire Clothes, Nos.	*18*	*19*	*20*
100 feet	*$2.50*	*2.25*	*2.00*
75 feet	*$2.10*	*1.80*	*1.65*

Johnson Cordage Works:
Solid Braided Chalk, Nos. 0 to 3..40%
Solid Braided Masons'.....30%
Silver Lake Braided Chalk, No. 0, $6.00; No. 1, $6.50; No. 2, $7.00; No. 3, $7.50.....₩ gr. 20%
Masons' Lines, Shade Cord, &c.:
White Cotton, No. 3½, $1.50; No. 4, $2.00; No. 4½, $2.50; Colors, No. 3½, $1.75; No. 4, $2.25; No. 4½, $2.75; Linen, No. 3½, $2.50; No. 4, $3.50; No. 4½, $4.50.....20%
Tent and Awning Lines: No. 5, White Cotton, $7.50; Drab Cotton, $8.50 .....20%
Clothes Lines, White Cotton: 50 ft., $2.75; 60 ft., $3.25; 70 ft., $3.75; 75 ft., $4.00; 80 ft., $4.25; 90 ft., $4.75; 100 ft., $5.25.....20%
Turner & Stanton Co.:
Solid Braided Chalk, Masons' and Awning Lines.....40%
Clothes Lines, White Cotton.....20%
Shade Cord, Cotton or Linen....20%

Locks— Cabinet—

Cabinet Locks.....*33⅓%*

Door Locks, Latches, &c.—

NOTE.—Net Prices are very often made on these goods.

Reading Hardware Co.....40%
R. & E. Mfg. Co.....10%

Padlocks—

R. & E. Mfg. Co. Wrought Steel and Brass .....75&10%

Sash, &c.—

Ives' Patent:
Bronze and Brass, 55&5%; Crescent, 60%; Iron, 60%; Window Ventilating, 40&20%; Robinson Pat. Ventilating Sash Lock, 33⅓%.
Pullman Patent Ventilating Lock..35%
Reading Sash Locks.....40%

Machines—Boring—

Com. Upr't, without Augers, *$2.00@2.25*
Com. Angl'r, without Augers, *$2.25@2.50*
Swan's Improved.....40&10%
Jennings', Nos. 1 and 4.....25&7½%
Millers' Falls..... 5.75
Snell's, Upright, $2.65; Angular, $2.90

Corking—

Reisinger Invincible Hand Power.... ₩ doz. $18.00

Fence—

Williams' Fence Machines....each, $5.50

Hoisting—

Moore's Anti-Friction Chain Hoist.30%
Moore's Hand Hoist, with Lock Brake 20%
Moore's Cyclone High Speed Chain Hoist 25%

Ice Cutting—

Chandler's 12½%

Washing

Boss Washing Machine Co.:	Per doz.
Boss No. 1	$57.00
Boss Rotary	$57.00
Champion Rotary Banner No. 1	$57.00
Standard Champion No. 1	$50.00
Standard Perfection	$27.00
Cincinnati Square Western	$33.00
Uneeda American, Round	$33.60

Mallets—

Hickory .....*45&5@50%*
Lignumvitæ .....*45&5@50%*
Tinners' Hickory and Applewood .....*doz. 45&5@50%*

Mangers, Stable—

Swett Iron Works.....50%

Mats, Door—

Acme Flexible Steel.....50%
Elastic Steel (W. G. Co.), new list.50%

Mattocks—

See *Picks and Mattocks.*

Milk Cans—See *Cans, Milk.*

Mills, Coffee, &c.—

Enterprise Mfg. Co.....20@25%
National list Jan. 1, 1902.....30%
Parker's Columbia and Victoria..33⅓%
Parker's Box and Side.....50&10%
Swift, Lane Bros. Co.....30%

Motors, Water—

Divine's Red Devil.....30%
Lippincott's 30%

Mowers, Lawn—

NOTE.—Net prices are generally quoted

Cheapest, 10-in., $2.00; 12-in., $2.10, etc.
Cheap, 10-in., $2.25; 12-in., $2.45, etc.
Better Grade, 10-in., $3.00; 12-in., $3.25, etc.

	12	*14*	*16*	*18-in.*
High Grade	*$4.50*	*4.75*	*5.00*	*5.25*

Continental 60%
Great American.....70%
Great American Ball B'r'g, new list.70%
Quaker City.....70%
Pennsylvania 60%
Pennsylvania, Jr., Ball Bearing, 50&10&5%
Pennsylvania Golf.....50%
Pennsylvania Horse.....33⅓&5%
Pennsylvania Pony.....40&5%
Granite State:
Style A, Low Wheel.....70%
Style B, Low Wheel.....70%
Style C, High Wheel, spcl. list, 70&10%
Style D, High Wheel, spcl. list..70%
Philadelphia:
Styles M., S., C., K., T....70&10&5%
Style A, all Steel.....60&10&5%
Style E, High Wheel.....70&10&5%
Drexel and Gold Coin, special list.40%
Horse .....40&5%
Pony .....40&5%
36-in. Horse.....30&10%
Eagle Horse.....30&5%
I. X. L. Horse.....50%

Nails—

Wire Nails and Brads, Miscellaneous .....*87½@87½&10%*
Cut and Wire. See *Trade Report.*
Hungarian, Finishing, Upholsterers' &c. See *Tacks.*

Horse—

Nos.	6	7	8	9	10	
Anchor	23	21	20	19	18	...40&5%
Coleman	13	12	12	11	11	.....net
New Haven..	23	21	20	19	18	...40&5%
Livingston	19	18	17	16	16	.....10%

Western .....₩ lb. 8½¢
Jobbers' Special Brands..... *per lb.9@10¢*

Picture—

	1½	*2*	*2½*	*3*	*in.*
Brass H'd.	*.45*	*.55*	*.60*	*.70*	*.. gro*
Por. Head..	*1.10*	*1.10*	*1.10*		*.. gro*

Nippers—

See *Pliers and Nippers.*

Nuts—

Cold Punched: Off list.
Square, Blank or Tapped.4.80¢
Hexagon, Blank or Tapped..5.10¢
Square, B'k, C., T. & R...5.10¢
Hexagon, B'k, C., T. & R..5.70¢
Hot Pressed:
Square, Blank.....*5.70¢*
Hexagon, Blank.....*5.60¢*
Square, Tapped.....*5.10¢*
Hexagon, Tapped.....*6.00¢*

Oakum—

Best .....*lb., 6½¢*
U. S. Navy.....*lb., 6¢*
Navy .....*lb., 5¢*
Plumbers' Spun Oakum..2¾@3¢

Oil Tanks—See *Tanks, Oil.*

Oilers—

Steel, Copper Plated.....*75%*
Chase or Paragon:
Brass and Copper.....*50&10%*
Zinc .....*65&10%*
Malleable, Hammers' Improved, Nos. 11, 12 and 13, 20%; Old Pattern, Nos. 1, 2, 3, 50%.
American Tube & Stamping Co.:
Spring Bottom Cans.....70&70&10%
Railroad Oilers, &c.....60@60&10%

Openers— Can— *Per doz.*

Sprague, Iron Handle....*30@35¢*
Sprague, Wood Handle...*35@40c*
Sardine Scissors.....*$1.75@$3.00*
Yankee Can and Bottle Opener, ₩ doz., net, $0.75; Little Gem, ₩ doz., net.....$0.65

Egg—

Hartigan Nickel Plate, ₩ doz., $2.00; Silver Plate, $4.00.

Packing—

Asbestos Packing, Wick and Rope .....*20@25¢*

Rubber—

(Fair quality goods.)

Sheet, C. I......*11@12¢*
Sheet, C. O. S......*11@12¢*
Sheet, C. B. S......*12@13¢*
Sheet, Pure Gum.....*40@45¢*
Sheet, Red.....*40@50¢*
Jenkins' '96, ₩ lb. 80¢.....25%

Miscellaneous—

American Packing...*lb. 7@10 ¢*
Cotton Packing.....*lb. 16@25 ¢*
Italian Packing.....*lb. 9@12½¢*
Jute .....*lb. 4@ 4½¢*
Russia Packing.....*lb. 8@11 ¢*

Pails, Water, Well, &c.—

See *Buckets.*

Pans— Dripping—

Standard List.....*65&7½@70%*
Edwards, Royal Blue.....65&7½%

Fry—

Common Lipped:

Nos.	*1*	*2*	*3*	*4*	*5*
Per doz..	*$0.75*	*0.80*	*0.90*	*1.10*	*1.30*

Refrigerator, Galva.—

Inch	*12*	*14*	*16*	*18*
Per doz	*$1.75*	*2.25*	*2.80*	*3.15*

Paper—Building Paper

Asbestos: *lb.*
Roll Board or Building Felt, 6 to 30 lb., per 100 sq. ft.3½@5¢
Roll Board or Building Felt, 3-32 and ⅛ in., 45 to 60 lb., per 100 sq. ft......*6¢*
Mill Board, Sheet, 40 x 40 in., 1-32 to ⅛ in......*3@5¢*

Per roll

Rosin Sized Sheathing: 500 sq. ft. Light weight, 25 lbs. to roll *48@58¢*
Medium weight, 30 lbs. to roll.. *56@70¢*
Heavy weight, 40 lbs. to roll.. *75@78¢*
Black Water Proof Sheathing, 500 sq. ft., 1 ply, 65¢; 2 ply, 85¢; 3 ply, $1.10; 4 ply, $1.25.
Deafening Felt, 9, 6 and 4½ sq. ft. to lb. ton.....*$54.50*
Red Rope Roofing, 250 sq. ft. per roll.....*$1.75*

Tarred Paper—

1 ply (roll 400 sq. ft.), ton.... *$34.00@$38.00*
2 ply, roll 108 sq. ft.....*65¢*
3 ply, roll 108 sq. ft.....*85¢*
Slater's Felt (roll 500 sq. ft.)..80¢

Sand and Emery—

Flint Paper and Cloth.50&10@—%
Garnet Paper and Cloth....*25%*
Emery Paper and Cl'h..50&10@60%

Parers— Apple—

Goodell Co.:
Family Bay State.....₩ doz, $15.00
Improved Bay State.....₩ doz. $36.00
New Lightning.....₩ doz. $7.00
Turn Table '98.....₩ doz. $6.00
White Mountain.....₩ doz. $5.00
Bonanza Improved.....each $7.50
Dandy .....each $10.00
Eureka Improved.....each $20.00
New Century.....each $20.00
Ranger .....each $25.00

Livingston Nail Co.:
Daisy .....₩ doz. $4.00
Little Star.....₩ doz. $5.00
Rocking Table.....₩ doz. $6.20

Reading Hardware Co.:
Advance .....₩ doz. $4.00
Baldwin .....₩ doz. $4.00
Reading 72.....₩ doz. $3.25
Reading 78.....₩ doz. $6.25

Potato—

Saratoga .....₩ doz. $7.00
White Mountain.....₩ doz. $6.00

Picks and Mattocks—

List .....*70&10&5%*
Cronk's Handled Garden Mattock, ₩ doz., No. 2, $2.60; No. 3, $6.40.

Pinking Irons—
See *Irons, Pinking.*

Pins, Escutcheon—
Brass .....50@50&10%
Iron, list Nov. 11, '85..60@60&10%

Pipe, Cast Iron Soil—
Standard, 2-6 in.....60&10@—%
Extra Heavy, 2-6 in..70&10@—%
Fittings, Standard and Heavy, 75&10@—%

Pipe, Merchant—

	Consumers, Carloads. Steel. Blk.	Galv.	Iron. Blk.	Galv.
	%	%	%	%
⅛ & ¼ in...	64	48	57	41
⅜ in.....	66	52	59	41
½ in.....	68	56	61	49
¾ to 6 in....	72	62	66	56
7 to 12 in....	69	54	61	46

Pipe, Vitrified Sewer—
Carload lots.
Standard Pipe and Fittings, 8 to 24 in., f.o.b. factory:
First-class 82%
Second-class 85%

Pipe, Stove—

	Per 100 joints. O. L.	L. C. L.
Edwards' Nested:		
5 in., Standard Blue....	$6.25	$7.25
6 in., Standard Blue....	6.75	7.75
7 in., Standard Blue....	7.75	8.75
5 in., Royal Blue.....	7.00	8.00
6 in., Royal Blue.....	7.50	8.50
7 in., Royal Blue.....	8.50	9.50
Wheeling Corrugating Co.'s Nested:		
5 in., Uniform Color..	$6.15	$7.15
6 in., Uniform Color..	6.65	7.65
7 in., Uniform Color..	7.65	8.65

Planes and Plane Irons—

Wood Planes—
Bench, first qual.....30@30&10%
Bench, second qual...40@40&10%
Molding .....25@25&10%
Chapin-Stephens Co.:
Bench, First Quality.....30%
Bench, Second Quality.....40%
Molding and Miscellaneous.....25%
Toy and German.....30%
Union 60%

Iron Planes -
Chaplin's Iron Planes.....50&10%
Union 60%

Plane Irons—
Wood Bench Plane Irons, list Dec. 12, '06.....25%
Buck Bros.....30%
Chapin-Stephens Co.....25%
Union 50%
L. & I. J. White.....20&5@25%

Planters, Corn, Hand—
Kohler's Eclipse.....₩ doz. $8.00

Plates—
Felloe .....lb. 4@4¼¢

Pliers and Nippers -
Button Pliers....75&5@75&10&5%
Gas Burner, per doz., 5 in., $1.25 @ $1.30; 6 in., $1.45 @ $1.50.

Gas Pipe..	7	8	10	12-in.
	$2.00	$2.25	$2.75	$3.50

Acme Nippers.....50&5%
Cronk & Carrier Mfg. Co.:
American Button.....80%
Improved Button.....75&10%
Cronk's 60%
No. 80 Linemen's.....50%
Stub's Pattern.....45%
Combination and others.....33⅓%
Heller's Farriers' Nippers, Pincers and Tools.....40&5@40&10&5%
P., S. & W. Tinners' Cutting Nippers 40%
Wm. Schollhorn Co.:
Bernard, 35%; Elm City, 35%; Paragon, 50%; Lodi, 55%.
Swedish Side, End and Diagonal Cutting Pliers.....50%
Utica Drop Forge & Tool Co.:
Pliers and Nippers, all kinds.....40%

Plumbs and Levels—
Chapin-Stephens Co.:
Plumbs and Levels.....30@30&10%
Chapin's Imp. Brass Cor..40@40&10%
Pocket Levels.....30@30&10%
Extension Sights.....30@30&10%
Machinists' Levels.....40@40&10%
Disston's Plumbs and Levels....60&10%
Disston's Pocket Levels.....60&10%
Stanley's Duplex.....33⅓%
Woods' Extension.....33⅓%

Points, Glaziers'—
Bulk and 1-lb. papers...lb. 9½¢
½-lb. papers.....lb. 10 ¢
¼-lb. papers.....lb. 10½¢

Police Goods—
Manufacturers' Lists...25@25&5%
Tower's 25%

Polish—Metal, Etc—
Prestoline Liquid, No. 1 (¼ pt.), ₩ doz., $3.00; No. 2 (1 qu.), $9.00..40%
Prestoline Paste.....60%
George William Hoffman:
U. S. Metal Polish Paste, 3 oz. boxes, ₩ doz. 50¢; ₩ gro. $4.50; ½ lb boxes, ₩ doz. $1.25; 1 lb boxes, ₩ doz. $2.25.
U. S. Liquid, 8 oz. cans, ₩ doz., $1.25.
Barkeepers' Friend Metal Polish, ₩ doz., $1.75.

Stove—
Black Eagle Benzine Paste, 5 lb cans, ₩ lb 10¢
Black Eagle, Liquid, ⅛ pt. cans.. ₩ doz. 75¢
Black Jack Paste, ¾ lb cans, ₩ gr. $9.00
Black Kid Paste, 5 lb can....each, $0.65
Ladd's Black Beauty Liquid, per 100 tins.....$6.75
Joseph Dixon's, ₩ gr. $5.75.....10%
Dixon's Plumbago.....₩ lb 8¢
Fireside .....₩ gr. $2.50
Gem, ₩ gr. $4.50.....10%
Japanese .....₩ gr. $3.50
Jet Black.....₩ gr. $3.50
Peerless Iron Enamel, 10 oz. cans.. ₩ doz. $1.50

Poppers, Corn—
1 qt. Square..doz.$0.80; gro.$8.75
1 qt. Round..doz.$0.90; gro.$10.00
1½ qt. Square.doz.$1.00; gro.$11.00
2 qt. Square..doz.$1.25; gro.$13.50

Post Hole and Tree Augers and Diggers—
See also *Diggers, Post Hole, &c.*

Posts, Steel—
Steel Fence Posts, each, 5 ft., 42¢: 6 ft., 46¢; 6½ ft., 48¢.
Steel Hitching Posts.....each $1.30

Potato Parers—
See *Parers, Potato.*

Pots, Glue—
Enameled .....35&10%
Tinned .....30&10%

Powder—
In Canisters:
Duck, 1 lb.....each 45¢
Fine Sporting, 1 lb....each 75¢
Rifle, ½-lb.....each 15¢
Rifle, 1-lb.....each 25¢
In Kegs:
12½-lb. kegs.....$3.50
25-lb. kegs.....$4.50
King's Semi-Smokeless:
Keg (25 lb bulk).....$6.50
Half Keg (12½ lb bulk).....$3.50
Quarter Keg (6¼ lb bulk).....$1.90
Case 24 (1 lb cans bulk).....$8.50
Half case (1 lb cans bulk).....$4.50

King's Smokeless:	Shot Gun.	Rifle.
Keg (25 lb bulk)	$12.00	$15.00
Half Keg (12½ lb bulk)...	6.25	7.75
Quarter Keg (6¼ lb bulk).	3.25	4.00
Case 24 (1 lb cans bulk)..	14.00	17.00
Half case 12 (1 lb c. bk)...	7.25	8.75

Presses—
Fruit and Jelly—
Enterprise Mfg. Co.....20@25%
Seal Presses—
Morrill's No. 1, ₩ doz., $20.00.....50%

Pruning Hooks and Shears
See *Shears.*

Pullers, Nail—
Cyclops 50%
Miller's Falls, No. 3, ₩ doz., $12.00.. 33⅓&10%
Morrill's No. 1, Nail Puller, ₩ doz. $20.00 .....50%
Pearson No. 1, Cyclone Spike Puller, each $30.00.....50%
The Scranton Co. Case Lots:
No. 2B (large).....$5.50
No. 3B (small).....$5.00
Smith & Hemenway Co.:
Diamond B.....70%
Giant 50%
Staple Pullers, Utica and Davison 60%

Pulleys, Single Wheel—

Inch	1½	1¾	2	3
Awning or Tackle, doz.	$0.30	.45	.60	1.05

Hay Fork, Swivel or Solid Eye. doz., ¼ in., $1.25; 5 in., $1.55				
Inch	2	2¼	2½	
Hot House, doz.	$0.65	.85	1.20	
Inch	1¼	1½	1¾	2
Screw, doz.	$0.16	.19	.23	.30
Inch	1¾	2	2¼	2½
Side, doz.	$0.25	.40	.55	.60
Inch	1½	1¾	2	2½

Sash Pulleys—
Common Frame; Square or Round End, per doz, 1¾ and 2 in.....17@20¢
Auger Mortise, no Face Plate, per doz., 1¾ and 2 in....20@21¢
Acme, No. 35..1¾ in., 19¢; 2 in., 20½¢
American Pulley Co.:
Wrought Steel American Plain Axle .....50&10%
Wrought Steel, Eagle.....17@20¢
Fox-All-Steel, Nos. 3 and 7, 2 in.... ₩ doz. 50
Grand Rapids All Steel Noiseless..50%
Niagara, No. 25, 1¾ in., 19¢; 2 in.....20½¢
No. 26, Troy..1¾ in., 14½¢; 2 in., 16½¢
Star, No. 28..1¾ in., 19¢; 2 in., 20½¢
Tackle Blocks—See Blocks.

Pumps—
Cistern 60%
Pitcher Spout.....75&5@75&10%
Wood Pumps, Tubing, &c....50%
Barnes Dbl. Acting (low list)....40&5%
Barnes Pitcher Spout.....75&10%
Contractors' Rubber Diaphragm No. 2, B. & L. Block Co.....$16.00
Daisy Spray Pump.....₩ doz. $6.50
Flint & Walling's, Fast Mail Hand, (low list).....50%
Flint & Walling's Fast Mail (low list) 50%
Flint & Walling's Tight Top Pitcher. .....75&10%
National Specialty Mfg. Co., Measuring, Nos. 2, $6.00; 3, $5.50.....30%
Myers' Pumps (low list).....40&5%
Myers' Power Pumps.....40&5%
Myers' Spray Pumps.....40&5%

Pump Leathers—
Plunger and Valve Leathers—Per gro.:

No.....	*1*	*2*	*3*	*4*	
	$5.00	*6.00*	*7.00*	*8.00*	80%

Cup Leathers—Per 100:					
Inch....	*2½*	*3*	*3½*	*4*	
	$5.00	*7.00*	*9.00*	*12.00*	

Punches—
Saddlers' or Drive, good..... *doz. 50@75¢*
Spring, single tube, good quality $1.75
Revolving (4 tubes)....*doz.$3.50*
Bemis & Call Co.'s Cast St'l Drive.50%
Morrill's Nos. 1AA, 1A, 1B, 1C, 1D, $15.00.....50%
Hercules, 1 die, each $5.00.....50%
Niagara Hollow Punches.....40%
Niagara Solid Punches.....55&10%
Wm. Schollhorn Co.:
Belt and Ticket, Bernard, 35%; Paragon, 50%; Lodi.....55%
Tinners' Hollow, P., S. & W. Co..40%
Tinners' Solid, P., S. & W. Co., ₩ doz., $1.44.....40%

Rail—Barn Door, &c.—
Sliding Door, Painted Iron.... 2½@2¾¢
Sliding Door, Wrought Brass, 1⅛ in., lb., 36¢ 30%
Allith Mfg. Co.: Reliable Hanger Track 50%
Cronk's:
Double Braced Steel Rail..₩ ft. 3¼¢
O. N. T. Rail.....$3.12
Griffin's:
xxx, ₩ 100 ft., 1 x 3-16 in., $3.25; 1¼ x 3-16 in., $3.75.
Hinged Hanger, ₩ 100 ft., 1 x 3-16 in., $3.50; 1¼ x 3-16 in., $4.00.
Lane's:
Hinged Track, ₩ 100 ft. $3.45
O. N. T., ₩ 100 ft., 1 in., $3.00; 1¼ in., $3.45; 1½ in., $4.00.
Standard, 1¼ in.....₩ 100 ft. $4.00
Lawrence Bros.:
1 x 3-16 in., ₩ 100 ft., $7.50; 1¼ x 3-16 in., $8.75.....55&7½%
McKinney's:
Hinged Hanger Track, ₩ ft., 11¢, 60&5%
1 x 3-16 Track.....55&7½%
Myers' Stayon Track.....60&5%
Richards' Mfg. Co.:
Common, 1 x 3-6 in., $3.00; 1¼ x 3-16, $3.25; 1¼ x 3-16, $3.50.
Special Hinged Hanger Rail...60&10%
Lag Screw Rail, No. 65.....50%
Gauge Trolley Track, ₩ ft., No. 31, 9¢; No. 32, 14¢; No. 33, 20¢.
No. 50.....60&10%
Nos. 61, $3.00; 62, $3.25; 63, $3.50; 64, $4.00; 45, $3.25; 46, $3.50; 49, No. 1, $3.25; 49, No. 2, $3.50.

Rakes—
NOTE.—Many goods are sold at net prices.
Fort Madison Red Head Lawn....$3.25
Fort Madison Blue Head Lawn....$2.70
Cronk's:
Steel Garden: Champion, 75%; Ideal, 80%; Victor.....80&25%
Queen City Lawn, ₩ doz., 20 teeth, $2.85; 24, $3.00.....net
Anticlog Lawn, ₩ doz.....$4.00
Malleable Garden.....70&10%
Ideal Steel Garden, ₩ doz., 12 teeth, $15.00; 14, $16.00; 16, $18.00.....80%
Kohler's:
Lawn Queen, 20-tooth....₩ doz. $3.15
Lawn Queen, 24-tooth....₩ doz. $3.25
Paragon, 20-tooth.....₩ doz. $2.70
Paragon, 24-tooth.....₩ doz. $2.75
Steel Garden, 14-tooth....₩ doz. $2.40
Malleable Garden, 14-tooth, ₩ doz. $2.00@2.25

Rasps, Horse—
Disston's 75%
Heller Bros.'.....70&5@70&10&5%
Liverright Bros.' Gold Medal.70&10@75%
McCaffrey's American Standard..... 60&10&5%
New Nicholson.....70&10@75%
See also Files.

Razors—
Liana Bo-ras-ic.....60%
Fox Razors, ₩ doz., No. 42, $18.00; No. 44, $20.00; No. 82, Platina, $25.00. } 10%*
Red Devil.....65%

Reels, Fishing—
Hendryx:
M 6, Q 6, A 6, B 6, M 9¼, M 16, Q 16, A 16, B 16, 4008, Rubber, Populo, Nickeled Populo.....20%
Aluminum, German Silv., Bronze.25%
1240 N, 124 N.....20%
3001 N, 06 N, 6 RM, G 9.....25%
4 N, 6 PN, 20 N, 26 PN.....20%
2904 P., 33⅓%; 2904 PN., 33⅓%; 0024 N., 33⅓%; 02084 N., 33⅓%; 002904 PN., 33⅓%; 802 N., 33⅓%.....25%
986 PN, 2904 N, 974 PN.....25%
5009 PN, 5009 N.....20%
Competitor 102 P, 102 PN, 202 P, 202 PN, 102 PR, 202 PR.....20%
304 P, 304 PN, 00304 P, 00304 PN.33⅓%

Registers—*List July 1, 1903.*
Japanned, Electroplated and Bronzed .....70@70&10%
White Porcelain Enamel..50&10%
Solid Brass or Bronze Metal..40%

Revolvers—
Single Action.....95¢@$1.00
Double Action, except 44 cal..$2.00
Double Action, 44 caliber....$2.00
Automatic $4.00
Hammerless $4.50

Riddles, Hardware Grade
16 in.....*per doz.*$2.50@$2.75
17 in.....*per doz.*$2.75@$3.00
18 in.....*per doz.*$3.00@$3.25

Rings and Ringers—
Bull Rings—

	2	2½	3 *inch.*
Steel	*$0.70*	*0.75*	*0.80 doz.*
Copper	*$1.10*	*1.25*	*1.65 doz.*

Hog Rings and Ringers—
Hill's Rings, gro. boxes....$4.25
*Hill's Ringers, Gray Iron, doz.*60¢
*Hill's Ringers, Malleable Iron, doz.*80¢
Blair's Rings.....*per gro.*$ 0
Blair's Ringers.....*per doz.*75¢
Brown's Rings.....*per gro.*$5.25
Brown's Ringers....*per doz.*75¢

Rivets and Burrs—
Copper 50%
Carriage, Coopers', Tinners, &c.:
Black .....70&10%
Metallic Tinned.....70%

Bifurcated and Tubular—
Assorted in Boxes.
Bifurcated, per doz. boxes, pasteboard boxes, 50 count, 23@25¢; *Tin boxes, 100 count,* 29@32¢.
Tubular, per doz. boxes, 50 count, 29@32¢; *100 count,* 51@58¢.

Rollers—
Cronk's Stay, No. 50.....$1.00
Cronk's Brinkerhoff No. 55, $0.60; No. 56, $0.75; No. 60.....$0.75
Lane's Stay.....40%
Richards' Stay:
Handy Adj. and Reversible No. 53.75¢
O. K. Adj. and Reversible No. 58.50¢
Lag Screw, Nos. 55 and 57.....50%
Underwriters', Nos. 59, 60.....50%
Favorite, No. 54.....60%

Rope—
Manila, 7-16 in. diam. and larger:
Pure .....*lb.*, 11½@12¢
Sisal, 7-16 in. diam. and larger:
Pure .....*lb.*, 8¢
Sisal, 7-16 in. diam. and larger;
No. 2 quality.....*lb.*, 7@7¼¢
Sisal, Hay, Hide and Bale Ropes, Medium and Coarse:
Mixed .....*lb.*, 7@7¼¢
Pure .....*lb.*, 9¼¢
Sisal, Tarred, Medium Lath Yarn, Coarse and Untarred:
Mixed .....*lb.*, 6¼@6¾¢
Pure .....*lb.*, 7¼¢
Cotton Rope:
Best, ¼-in. and larger...18@20¢
*Medium, ¼-in. and larger.*16@17¢
Common, ¼-in. and larger..10¢
In coils, ½¢ advance.
Jute Rope:
Thread, No. 1, ¼-in. & up, lb. 7½@8¢
Thread, No. 2, ¼-in. & up, lb. 7@7½¢

Wire Rope—
Galvanized .....37½&2½%
Plain .....45&2½%

Ropes, Hammock—
Covert Mfg. Co.:
Jute, 35%; Sisal.....20%

Rules
Boxwood .....60@60&10%
Ivory .....35&10@35&10&5%
Chapin-Stephens Co.:
Boxwood 60%
Flexifold 40%
Ivory .....25@25&10%
Miscellaneous .....50@50&10%
Stephens' Combination.....55%
Stationers' .....50@50&10%
Keuffel & Esser Co.:
Folding, Wood.....35&10%
Folding, Steel.....33⅓&10%
Lufkin's Steel.....50&10%
Lufkin's Lumber.....50&10%
Upson Nut Co.:
Boxwood .....60@60&10%
Ivory .....35&10@35&10&10%

Sash Balances—
See *Balance, Sash.*

Sash Locks—See *Locks, Sash.*

Sash Weights—
See *Weights, Sash.*

Sausage Stuffers or Fillers
See *Stuffers or Fillers, Sausage.*

Saw Frames—
See *Frames, Saw.*

Saw Sets—See *Sets, Saw.*

Saw Tools—See *Tools, Saw.*

Saws—

Atkins':
Circular 45%
Band ..... 50@50&10%
Butcher Saws 50%
Cross Cuts 35%
One-Man Cross Cut 40%
Narrow Cross Cut 50%
Hand, Rip and Panel ..... 35&5%
Miter Box and Compass 40%
Mulay, Mill and Drag 45%
Wood Saws ..... 40&10%
Chapin-Stephens Co.:
Turning Saws and Frames..30@30&10%
Diamond Saw & Stamping Works:
Sterling Kitchen Saws.....30&10&10%
Disston's:
Circular, Solid and Ins'ted Tooth.50%
Band, 2 to 18 in. wide 60%
Band, ¼ to 1¼ 60%
Crosscuts 45%
Narrow Crosscuts 50%
Mulay, Mill and Drag 50%
Framed Woodsaws 25%
Woodsaw Blades 25%
Woodsaw Rods, Tinned 15%
Hand Saws, Nos. 12, 99, 9, 16, d100, D8, 120, 76, 77, 8 ..... 25%
Hand Saws, Nos. 7, 107, 107½, 3, 1, 0, 00, Combination 30%
Compass, Key Hole, &c. 25%
Butcher Saws and Blades 30%
C. E. Jennings & Co.'s:
Back Saws 16⅔%
Butcher Saws ..... 25&7½%
Compass and Key Hole Saws, 33⅓&7½%
Framed Wood Saws ..... 25&7½%
Hand Saws 12½%
Wood Saw Blades ..... 33⅓&7½%
Millers Falls:
Butcher Saws ..... 15&10%
Star Saw Blades ..... 15&10%
Massachusetts Saw Works:
Victor Kitchen Saws ..... 40&10&50%
Butcher Saws Blades ..... 35@40%
Peace & Richardson's Hand Saws...30%
Simonds':
Circular Saws 45%
Crescent Ground Cross Cut Saws..30%
One-Man Cross Cuts ..... 40&10%
Gang Mill, Mulay and Drag Saws.45%
Band Saws 50%
Back Saws ..... 25@25&7½%
Butcher Saws ..... 35@35&7½%
Hand Saws ..... 25@25&7½%
Hand Saws, Bay State Brand 45%
Compass, Key Hole, &c..25@25&7½%
Wood Saws ..... 40&7½%
Wheeler, Madden & Clemson Mfg. Co.'s Cross Cut Saws 50%

Hack Saw Blades and Frames—

Atkins' Hack Saw Blades A A A..25%
Disston's:
Concave Blades 25%
Keystone Blades 35%
Hack Saw Frames 30%
Simonds File Co. 35%
C. E. Jennings & Co.'s:
Hack Saw Frames, Nos. 175, 180 ..... 40&7½%
Hack Saws, Nos. 175, 180, complete, 40&7½%
Goodell's Hack Saw Blades.....40&10%
Griffin's Hack Saw Frames..35&5&10%
Griffin's Hack Saw Blades....35&5&10%
Star Hack Saws and Blades.....15&10%
Sterling Hack Saw Blades....30&10&5%
Sterling Hack Saw Frames..30&10&10%
Sterling Power Hack Saw Machines, each, No. 1, $25.00; No. 2, $30.00..10%
Victor Hack Saw Blades 20%
Victor Hack Saw Frames 40%
Whitaker Mfg. Co.:
National Hand Blades 40%
National Hand Frames ..... 30&5%
National Power Blades ..... 30&10%

Scroll—

Barnes, No. 7, $15 ..... 25%
Barnes' Scroll Saw Blades 40%
Barnes' Velocipede Power Scroll Saw, without boring attachment, $18; with boring attachment, $20 ..... 20%
Lester, complete, $10.00 ..... 15&10%
Rogers, complete, $3.50 and $4.00 ..... 15&10%

Scales—

Family, Turnbull's....50@50&10%
Counter:
Hatch, Platform, ½ oz. to 4 lbs. .....doz., $5.50
Two Platforms, ½ oz. to 8 lbs. .....doz., $16.00
Union Platform, Plain.$1.70@1.90
Union Platform, Stpd.$1.85@2.15
Chatillon's:
Eureka 25%
Favorite 40%
Crocers' Trip Scales 50%
The Standard Portables 40%
The Standard R. R. and Wagon ..... 50&10%

Scrapers—

Box, 1 Handle.....doz. $2.00@2.25
Box, 2 Handle.....doz. $2.50@2.60
Ship....Light, $2.00; Heavy, $4.50
Chapin-Stephens Co., Box...30@30&10%
Richards Mfg. Co., Foot 60%

Screws—Bench and Hand

Bench, Iron, doz., 1 in., $2.50@2.75; 1⅛, $3.00@3.25; 1¼, $3.50@3.75
Bench, Wood ..... 20@20&10%
Hand, Wood...70&10@70&10&10%
Chapin-Stephens Co., Hand ..... 70@70&10&2½%

Coach, Lag and Hand Rail—

Lag, Cone Point.....75&10&10%
Coach, Gimlet Point...75&10&5%
Hand Rail ..... 70&10@75%

Jack Screws—

Standard List.....70&10@75%
Millers Falls ..... 50&10&10%
Swett Iron Works ..... 70@75%

Machine—

Cut Thread, Iron, Brass or Bronze:
Flat Head or Round Head, 50@50&10%
Fillister Head.....40@40&10%
Rolled Thread, F. H or R. H., Iron .....75&10%
F. H. or R. H., Brass, Nos. 8 to 14 .....65&10%

Set and Cap—

Set (Iron).....75&10&7½%
Set (Steel), net advance over Iron 25%
Sq. Hd. Cap.....70&10&7½%
Hex. Hd. Cap.....70&10&7½%
Rd. Hd. Cap.....50&7½%
Fillister Hd. Cap.....60&7½%

Wood—

List July 23, 1903.
Flat Head, Iron.....87½&5@..%
Round Head, Iron.....85&5@..%
Flat Head, Brass.....80&5@..%
Round Head, Brass..77½&5@..%
Flat Head, Bronze....75&5@..%
Round Head, Bronze.72½&5@..%
Drive Screws.....87½&5@..%

Scroll Saws—

See *Saws, Scroll.*

Scythes— *Per doz.*

Grass, No. 1, Plain....$6.25@6.75
Clipper, Bronzed Webb.$6.50@7.00
No. 3 Clipper, Pol'd Webb..
$6.75@7.25
No. 6 Clipper and Solid Steel, $7.00@7.50
Bush, Weed and Bramble, No. 2. $6.50@7.00
Grain, No. 1.....$8.25@8.75
Bronzed Webb, No. 1..$8.50@9.00
Nos. 3 and 4 Clipper, Grain.. $8.75@9.25
Solid Steel, No. 6.....$9.25@9.75

Seeders, Raisin—

Enterprise ..... 25@30%

Sets— Awl and Tool—

Fray's Adj. Tool Handles, Nos. 1, $12; 2, $18; 3, $12; 4, $9; 5, $7 ..... 50%
Millers Falls Adj. Tool Handles, No. 1, $12; No. 4, $12; No. 5, $18..20&10%

Garden Tool Sets—

Ft. Madison Three Plows, Hoe, Rake and Shovel .....℔ doz sets $9.00

Sets, Nail—

Octagon .....gro. $3.50@3.75
Buck Bros. 27½%
Cannon's Diamond Point, ℔ gro. $12, 40&10%
Mayhew's .....℔ gro. $9.00
Snell's Corrugated, Cup Pt.....40&10%
Snell's Knurled, Cup Pt.....40&10%
Victor Knurled Cup Pt....℔ gro. $7.50

Rivet—

Regular list.....75@75&10%

Saw—

Atkin's:
Criterion 40%
Adjustable 40%
Disston's Star, Monarch and Triumph 30%
Morrill's No. 1.....$15.00
Nos. 3 and 4, Cross Cut....$20.60
No. 5, Mill.....$30.00
Nos. 10, 11, 95.....$15.60
No. 1 Old Style.....$10.00
Special $16.25
Giant Royal Cross Cut.....℔ doz. $8.00
Royal, Hand.....℔ doz. $4.50
Tainter Positive.....℔ doz. $4.75

Shaving—

Fox Shaving Sets, No. 30 ..... ℔ doz., net, $24.00
Smith & Hemenway Co.'s 75%

Sharpeners, Knife—

Pike Mfg. Co.:
Fast Cut Pocket Knife Hones, ℔ doz.....$1.50
Mounted Kitchen Sand Stone, ℔ doz.....$1.50
Natural Grit Carving Knife Hones, ℔ doz.....$3.00
Quick Cut Emery Carving Knife Hones, ℔ doz.....$1.50
Quick Edge Pocket Knife Hones, ℔ doz.....$2.00

Skate—

Smith & Hemenway Co., Eureka..50%

Shaves, Spoke—

Iron .....doz. $1.25
Wood .....doz. $2.00
Bailey's (Stanley R. & L. Co.)..... 45%
Chapin-Stephens Co..... 30@30&10%
Goodell's, ℔ doz. $9.00..... 15&10%

Shears—

Cast Iron..	*7*	*8*	*9 in.*	
Best	*$16.00*	*18.00*	*20.00*	*gro.*
Good	*$13.00*	*15.00*	*17.00*	*gro.*
Cheap	*$5.00*	*6.00*	*7.00*	*gro.*

Straight Trimmers, &c.:
Best quality Jap....70@70&10%
Best quality, Nickel..60@60&10%
Tailors' Shears.....40@40&10%
Acme Cast Shears ..... 40@40&5%
Heinisch's Tailor's Shears 10%
Wilkinson Shear & Cutlery Co.:
Sheep, 1900, list ..... 30&10&5%
Grass ..... 50&10%
Horse or Mule ..... 50&10%
J. Wiss & Sons Co.:
Best Quality Jap'd ..... 60&10%
Best Quality Nickeled ..... 50&10%
Tailors' 25%

Tinners' Snips—

Steel Blades.....20&5@20&10%
Steel Laid Blades.....40&10@50%
Forged Handles, Steel Blades, Berlin, 50%
Heinisch's Snips 40%
Jennings & Griffin Mfg. Co.'s 6½ to 10 in. .....33⅓&7½%
Niagara Snips 40%
P. S. & W. Forged Handles, 25%; W R. W. ..... 40&10%
J. Wiss & Sons Co.:
Wiss Forged Steel 25%

Pruning Shears—

Cronk's Hand Shears 33⅓%
Cronk's Wood Handle Shears.....33⅓%
Disston's Combined Pruning Hook and Saw, ℔ doz. $18.00 ..... 25%
Disston's Pruning Hook only, ℔ doz. $12.00 ..... 25%
John T. Henry Mfg. Co.:
Pruning Shears, all grades 40%
P. S. & W. Co. ..... 40&10%
Columbian Cutlery Co.:
Hedge, Wilcut Brand ..... 60&10%
Lawn and Border, Wilcut Brand, 60&10%

Sheaves—Sliding Door—

Reading 40%
R. & E. list 15%

Sliding Shutter—

Reading list 40%
R. & E. list 10%

Shells—Shells, Empty—

Brass Shells, Empty:
Climax, 10 and 12 gauge.....65&10%
Club, Rival, 65&5%; First Quality, 60&5%
Paper Shells, Empty:
New Rapid, 10, 12, 16 and 20 gauge, 25&10%
Climax, 10 and 12 gauge; Acme, 10, 12, 16 and 20 gauge; Ideal, 10, 12, 16 and 20 gauge; Leader grade, 25&5%
Union, League, 12 and 12 gauge; Rival Grade 25%
New Climax, Defiance, 10, 12, 14, 16 and 20 gauge; Climax, 14, 16 and 20 gauge ..... 20&5%
Challenge, Monarch, 10, 12, 16 and 20 gauge; League, Union, 14, 16 and 20 gauge; Repeater Grade..20%

Shells, Loaded—

Loaded with Black Powder..40%
Loaded with Smokeless Powder, medium grade .....40&5%
Loaded with Smokeless Powder, high grade .....40&10&10%
Union Metallic Cartridge Co.:
New Club, Black Powders 40%
Nitro Club, Smokeless Powders.40&5%
Arrow, Smokeless Powders.40&10&10%
Winchester:
Smokeless Repeater Grade.....40&5%
Smokeless Leader Grade...40&10&10%
Black Powder 40%

Shingles, Metal— Per Sq.

Edwards Mfg. Co.:	Painted.	Galv.
14 x 20	$4.25	$6.00
10 x 14	4.50	6.25
7 x 10	4.75	6.50

Wheeling Corrugating Co.:
Dixie, 14 x 20 in....$4.25 $5.50
Dixie, 10 x 14 in.... 4.50 6.00
Dixie, 7 x 10 in.... 5.00 6.75

Shoes, Horse, Mule, &c.—

F.o.b. Pittsburgh:
Iron .....per keg. $4.10
Steel .....per keg. $3.85
Burden's, all sizes.....℔ keg $3.90

Shot—

25-lb. bag.
Drop, up to B.....$1.85
Drop, B and larger..... 2.10
Buck 2.10
Chilled 2.10
Dust 2.30

Shovels and Spades—

Association List, Nov. 15, 1902..40%
Avery Stamping Co. 40%

Snow Shovels—

Long Handle.....$3.25@$3.50
Wood and Mall, D. Handle, $3.75@$4.00

Sieves and Sifters—

Hunter's Imitation..... gro. $9.50@10.00
Hunter's Genuine..... per gro. $12.00@12.50

Sifters, Ash—

Acme Ball Bearing Sales Co., Acme Automatic Ash Sifter, each, $3.25; ℔ doz. $39.00

Sieves, Seamless Metallic

Mesh	*Per dozen.* 14	16	18	20
Iron Wire	*$1.05*	*1.05*	*1.10*	*1.20*
Tinned Wire	*$1.15*	*1.15*	*1.20*	*1.30*

Sieves, Wooden Rim—

Nested, 10, 11 and 12 Inch.
Mesh 18, Nested....doz. $0.90@0.95
Mesh 20, Nested....doz. $1.00@1.05
Mesh 24, Nested....doz. $1.30@1.40

Sinks, Cast Iron—

Painted, Standard list:
12 x 12 to 22 x 36 in.....60%
20 x 40 to 24 x 50 in.....50%
24 x 60 to 24 x 120 in.....30%
Barnes' low list:
Up to and including 20 x 36 in.50&5%
20 x 40 to 24 x 50 in. 45%
NOTE.—There is not entire uniformity in lists used by jobbers.

Skeins, Wagon—

Cast Iron.....70@75&10%
Steel .....40@45%

Slates, School—

Factory Shipments.
"D" Slates.....50@50&10%
Eureka, Unexcelled Noiseless.. 60&5 tens
Victor A, Noiseless.60&4 tens 45%

Slaw Cutters—See *Cutters.*

Snaps, Harness—

German .....40@40&10%
Covert Mfg. Co.:
Derby, 25%; Yankee, 30&2%; Yankee Roller, 30&2%
High Grade, 40%; Trojan.....40%
Jockey 25%

Snaths—

Scythe .....55@60%

Snips, Tinners—See *Shears.*

Spoons and Forks—

Silver Plated—

Good Quality.....50&10@60&5%
Cheap .....60@60&10%
International Silver Co.:
1847 Rogers Bros., 40&10%; Rogers & Hamilton ..... 50&10%
Rogers & Bro., William Rogers Eagle Brand ..... 50&10%
Anchor, Rogers Brand 60%
Wm. Rogers & Son ..... 60&10%

Miscellaneous

German Silver.....60@60&5%

Tinned Iron—

Teas .....per gro. 50@55¢
Tables .....per gro. $0.90@$1.00

Springs— Door—

Bardsley's Spring and Check.....40%
Chicago (Coil) ..... 40&10%
Gem (Coil) 20%
Pullman (Coil) 35%
Reliance (Coil) ..... 40&10%
Star (Coil) 30%
Torrey's Rod, 39 in.....℔ doz. $1.10

Carriage, Wagon, &c.—

1¼ in. and Wider: Per 100 lb.
Black .....$4.75@$5.00
Half Bright.....$4.75@$5.00
Bright .....$5.25@$5.50
Painted Seat Springs:
1½ x 2 x 26.....per pr. 49@52¢
1½ x 3 x 28.....per pr. 73@77¢

Sprinklers, Lawn—

American Foundry & Mfg. Co.:
Cactus, 65%; Japanese, 70%; National, ℔ doz. $12.00
Enterprise ..... 25@30%
Philadelphia No. 1, ℔ doz. $12; No. 2, $15; No. 3, $20 ..... 30%

Squares—

Nickel plated.. } *List Jan. 5, 1900.*
Steel and Iron. } *80%*
Rosewood Hdl. Try Square and T-Bevels .....60&10&10@70%
Iron Hdl. Try Squares and T-Bevels .....40&10@40&10&10%
Disston's Try Squares and Bevels, Rosewood Handle, 60&10%; Iron Stock and Bevel 15%

Squeezers, Lemon

Wood, Common, gro., No. 0, $5.25@$5.50; No. 1, $6.25@$6.50.
Wood, Porcelain Lined:
Cheap .....doz. $1.00
Good Grade.....doz. $1.25
Tinned Iron.....doz. $0.75@1.25
Iron, Porcelain Lined...doz. $1.75

Staples—

Barbed Blind.....85&5@85&10%
Electricians' .....80&10&10@85%
Fence Staples, Plain, $2.15; Galvanized $2.45
Poultry Netting Staples..... per lb. 3¼@3½¢

Steels, Butchers'—

Dick's 30%
Foster Bros. 30%

Steelyards— ....30@30&10%

Stocks and Dies—

Blacksmiths' .....50@50&10%
Curtis Rev'ble Ratchet Die Stock..25%
Derby Screw Plates 25%
Green River 25%
Lightning Screw Plate 25%
Little Giant 25%
Reece's New Screw Plates 25%

Stoners, Cherry—

Enterprise ..... 25@30%

Stones—Oil, &c.

Pike Mfg. Co., 1907 list: ℔ lb
Arkansas St. No. 1, 3 to 5½ in. $2.80
Arkansas St. No. 1, 5½ to 8 in. $3.50
Arkansas Slips No. 1..... $4.00
Lily White Washita, 4 to 8 in. 60¢
Rosy Red Washita, 4 to 8 in. 60¢
Washita St., Extra, 4 to 8 in. 50¢
Washita St., No. 1, 4 to 8 in. 40¢
Washita St., No. 2, 4 to 8 in. 25¢
Lily White Slips ..... 90¢
Rosy Red Slips ..... 90¢
Washita Slips, Extra ..... 80¢
Washita Slips, No. 1 ..... 70¢
Washita Slips, No. 2 ..... 40¢
India Oil Stones (entire list) 33⅓%
Quickcut Emery and Corundum Oil Stone, Double Grit 40%
Quickcut Emery and Corundum Axe Stone, Double Grit 33⅓%
Quickcut Emery Rubbing Bricks..40%
Hindostan No. 1, R'g'lar. ℔ lb 8¢
Hindostan No. 1, Small.. ℔ lb 10¢
Axe Stones (all kinds) .....
Turkey Oil Stones, Extra, 5 to 8 in. ..... ℔ lb 80¢
Queer Creek Stones, 4 to 8 in. 20¢
Queer Creek Slips ..... 40¢
Sand Stone ..... 6¢

25%

33⅓%

Scythe Stones—

Pike Mfg. Co., 1901 list:
Black Diamond S. S., ₱ gro. $12.00
Lamoille S. S., ₱ gro. $11.00
White Mountain S. S., ₱ gro. $9.00
Green Mountain S. S., ₱ gro. $6.00
Extra Indian Pond S. S., ₱ gro. $7.50
No. 1 Indian Pond S. S., ₱ gro. $7.00
No. 2 Indian Pond S. S., ₱ gro. $4.50
Leader Red End S. S., ₱ gro. $4.50
Quick Cut Emery, ₱ gro. $10.00
Pure Corundum, ₱ gro. $18.00
Crescent $7.00
Emery Scythe Rifles, 2 Coat, $8
Emery Scythe Rifles, 3 Coat, $10
Emery Scythe Rifles, 4 Coat, $13
Balance of 1904 list 33⅓%
Electro (Artificial), ₱ gro., $12.00 33⅓%
Lightning (Artificial), ₱ gro., $18.00 33⅓%

Stoppers, Bottle—

Victor Bottle Stoppers, ₱ gro. $9.00

Stops—Bench—

Millers Falls 15&10%
Morrill's, ₱ doz., No. 1, $10.00 60%
Morrill's, No. 2, $12.50 60%

Door—

Chapin-Stephens Co. 50@50&10%

Plane—

Chapin-Stephens Co. 20%

Straps—Box—

Acme Embossed, case lots..20&10&10%
Cary's Universal, case lots....20&10&10%

Stretchers, Carpet—

Cast Iron, Steel Points, dos. 60@60&10%
Socket .....doz. $1.66
Excelsior Stretcher and Tack Hammer Combined, ₱ doz. $6.00 20%

Stuffers, Sausage—

Enterprise Mfg. Co. 25@25&7½%
National Specialty Co., list Jan. 1, 1902 30&5%
P., S. & W. Co. 40&10&5%

Sweepers, Carpet—

Bissell Carpet Sweeper Co.:	₱ doz.
Superba, Crotch Mahogany	$36.00
Triumph, Fancy Veneers	$33.00
Parlor Queen, Fig. Rosewood	$30.00
Elite, Hungarian Ash	$29.00
Am. Queen, Fig. Mahogany	$27.00
Ideal, Bird's-Eye Maple	$25.00
Grand Rapids, Nickel, Japan	$24.00; $22.00
Standard, Nickel, $22.00; Japan	$20.00
Crown Jewel, Nickel, $21.00; Jap.	$19.00
Crystal, Glass Top	$36.00
Grand, 17 in. wide	$36.00
Club, 24 in. wide	$54.00
Hall, 28 in. wide	$60.00

NOTE.—Rebates: 50c per dozen on three dozen lots; $1 per dozen on five-dozen lots; $2 per dozen on ten-dozen lots; $2.50 per dozen on twenty-five dozen lots.

Tacks, Finishing Nails, &c.

American Carpet Tacks 90&25%
American Cut Tacks 90&25%
Swedes' Cut Tacks 90&25%
Swedes' Upholsterers' 90&35%
Gimp Tacks 90&35%
Lace Tacks 90&35%
Trimmers' Tacks 90&25%
Looking Glass Tacks 65%
Bill Posters' and Railroad Tacks, 90&40%
Hungarian Nails 80&10%
Finishing Nails 70%
Trunk and Clout Nails 80%

NOTE.—The above prices are for Straight Weights.

Miscellaneous—

Double Pointed Tacks 90&10@90&10&10&5%
See also Nails, Wire.

Tanks, Oil and Gasoline—

Wilson & Friend Co.: Gal.	Gasoline	Oil
30	$2.75	$3.00
60	3.50	4.00
110	5.00	6.75

Tapes, Measuring—

American Asses' Skin ..50@—%
Patent Leather 25@30&5%
Steel $3 1-3&5%
Chesterman's 25@25&5%
Keuffel & Esser Co.:
Favorite, Ass Skin 40&10@50%
Favorite, Duck and Leather 25&5@25&10%
Metallic and Steel, lower list, 35@35&5%; Pocket, 35@35&5%.
Lufkin's:
Asses' Skin 40&10@50%
Metallic 30@30&5%
Patent Bend, Leather 25&5@25&10%
Pocket 40@40&5%
Steel 33⅓@33⅓%
Wiebusch & Hilger:
Chesterman's Metallic, No. 341, etc. 25%
Chesterman's Steel, No. 1038L, etc. 35%

Teeth, Harrow—

Steel Harrow Teeth, plain or headed, ⅝-inch and larger... per 100 lbs. $2.75@$3.00

Thermometers—

Tin Case, Cabinet, Flange, Dairy, &c. 30@33⅓%

Ties, Bale—Steel Wire—

Single Loop 80&10&5%
Monitor, Cross Head, &c. 70&2½%

Tinners' Shears, &c.—

See *Shears, Tinners', &c.*

Tinware—

Stamped, Japanned and Pieced, sold very generally at net prices.

Tire Benders, Upsetters, &c.

See *Benders and Upsetters, Tire.*

Tools—Coopers'—

L. & I. J. White 20@20&5%

Haying—

Myers' Hay Tools 45%

Miniature—

Smith & Hemenway Co.'s, Davidson, ₱ doz., Nickel Plated, $1.50; Gold Plated $2.00

Saw—

Atkins' Cross Cut Saw Tools 35&5%
Simonds' Improved 33⅓%
Simonds' Crescent 25%

Ship—

L. & I. J. White 25%

Transom Lifters—

See *Lifters, Transom.*

Traps—Fly—

Balloon, Globe or Acme, doz. $1.15@$1.25; gro. $11.50@12.00
Harper, Champion or Paragon, doz. $1.25@1.40; gro. $13.00@13.50

Game—

Imitation Oneida 75&10%
Newhouse 45@45&5%
Hawley & Norton 65%
Victor 75@75&10%
Oneida Community Jump 60%
Hector 75@75&10%

Mouse and Rat—

Mouse, Wood, Choker, doz. holes 12¢
Mouse, Round or Square Wire, doz. 85@90¢
Marty French Rat and Mouse Traps (Genuine):
No. 1, Rat, ₱ doz., $13.25..$11.50 doz.
No. 3, Rat, ₱ doz., $6.50... $5.75 doz.
No. 3½, Rat, ₱ doz., $5.25. $4.70 doz.
No. 4, Mouse, ₱ doz., $3.85. $3.00 doz.
No. 5, Mouse, ₱ doz., $3.00. $2.25 doz.
Oneida Community:
Out o' Sight, Mouse, ₱ doz.... $0.60
Out o' Sight, Rat, ₱ doz..... 1.25
Easy Set, Mouse, ₱ doz..... .35
Easy Set, Rat, ₱ doz..... 1.00
Wood Choker, Rat, ₱ doz. holes. .12
Premier Tin Choker, 5 hole, ₱ doz. traps..... .75

Trowels—

Disston Brick and Pointing... 25%
Disston Plastering 20%
Disston "Standard Brand" and Garden Trowels 30%
Kohler's Steel Garden Trowels, ₱ gro., 5 in., $4.80; 6 in., $6.00.
Never-Break Steel Garden Trowels.. ₱ gro. $6.00
Woodrough & McParlin, Plastering 25%

Trucks, Warehouse, &c.—

B. & L. Block Co.:
New York Pattern 50&10%
Western Pattern 60&10%
Handy Trucks ₱ doz. $16.00
Grocery ₱ doz. $15.00
McKinney Trucks..... each, net $10.00
Model Stove Trucks..... ₱ doz. $18.50

Tubs, Wash—

M'f'gr's list, price per gross.

No.	0	1	2	3
Galvanized	$67	$79	$89	$99

10&5%

Twine, Miscellaneous—

Flax Twine:
No. 9, ¼ and ⅓-lb. Balls.23@25¢
No. 12, ¼ and ⅓-lb. Balls.21@23¢
No. 18, ¼ and ⅓-lb. Balls.18@20¢
No. 24, ¼ and ½ -lb. Balls. 17½@19½¢
No. 36, ¼ and ½-lb. Balls.17@19¢
Chalk Line, Cotton ½-lb. Balls 26@31¢
Cotton Mops, 6, 9, 12 and 15 lb. to doz. 11@19¢
Cotton Wrapping, 5 Balls to lb., according to quality...15½@23¢
American 2-Ply Hemp, ¼ and ½-lb. Balls. 14½@15½¢
American 3-Ply Hemp, 1-lb. Balls 15½@16½¢
India 2-Ply Hemp, ¼ and ½-lb. Balls (Spring Twine) 10½@11½¢
India 3-Ply Hemp, 1-lb. Balls 10½@11½¢
India 3-Ply Hemp, 1½-lb. Balls, 10@11¢
2, 3, 4 and 5-Ply Jute, ½-lb. Balls 13½@14½¢
Mason Line, Linen, ½-lb. Bls.47¢
No. 24½ Mattress, ¼ and ½-lb. Balls, according to quality, 30@60¢
Wool, 3 to 6 ply....B 9¢; A 10¢

Vises—

Solid Box 50@50&10%

Parallel—

Athol Machine Co.:
Simpson's Adjustable 40%
Standard 40%
Amateur 25%
Columbian Hdw. Co. 40%
Fisher & Norris Double Screw, net, each, Nos. 2, $10.50; 3, $16.00; 4, $20.50; 5, $27.00.
Fulton Mach. & Vise Co.:
Reed, Swivel 25%
Star, Solid Jaw 40%
Hollands':
Machinists' 40@40&5%
Keystone 65&5@70%
Lewis Tool Co.:
Adjustable Jaw 30%
Monarch, 50%; Solid Jaw 50%
Massey Vise Co.:
Clincher 40%
Perfect, 15%; Lightning Grip 15%
Merrill's 20%
Millers Falls Oval Slide Pattern 60&10%
Parker's:
Victor, 20@25%; Regulars 20@25%
Vulcan's 40@45%
Combination Pipe 55@60%
Prentiss 20@25%
Rock Island 25%
Snediker's X. L. 33⅓%
Stephens' 33⅓%

Saw Filers—

Disston's D 3 Clamp and Guide, ₱ doz., $24.00, 30%; Clamps 50%
Perfection Saw Clamps, ₱ doz. $4.50
Reading 60%

Wood Workers—

Fulton Mach. & Vise Co.:
Reed 25%
Star 40%
Massey Vise Co.:
Lightning Grip, 15%; Perfect 15%
Wyman & Gordon's Quick Action, 6 in., $6.00; 9 in., $7.00; 14 in., $8.00.

Miscellaneous—

Holland's Combination Pipe..60@60&5%
Massey's Quick Action Pipe 40%
Parker's Combination Pipe:
87 Series, 60%; 187 Series, 60&5%; No. 870 40%.
Rock Island Pipe 25%

Wads—*Price per M.*

B. E., 11 up 60¢
B. E., 9 and 10 70¢
B. E., 8 80¢
B. E., 7 80¢
P. E., 11 up $1.00
P. E., 9 and 10 1.25
P. E., 8 1.50
P. E., 7 1.50
Dis. 15%
Ely's B. E., 11 and larger.$1.70@1.75
Ely's P. E., 12 to 20....$3.00@3.25

Ware, Hollow—Cast Iron, Hollow—

Stove Hollow Ware:
Enameled 45&10%
Ground 50&5%
Plain or Unground 60%
Country Hollow Ware, per 100 lbs. $3.00
White Enameled Ware:
Maslin Kettles 65&10%
Covered Wares:
Tinned and Turned 35&10%
Enameled 45&10%
See also *Pots, Glue.*

Enameled—

Agate Nickel Steel Ware 33⅓%
Iron Clad Ware 70&10%
Lava and Volcanic, Enameled 40&10%

Tea Kettles—

Galvanized Tea Kettles:

Inch	6	7	8	9
Each	45¢	50¢	55¢	65¢

Steel Hollow Ware—

Avery Spiders and Griddles..65@65&5%
Avery Kettles 60%
Porcelained 50&5@50&10%
Never Break Spiders and Griddles.. 65&5%
Never Break Kettles 60%
Solid Steel Spiders and Griddles.65&5%
Solid Steel Kettles 60%

Warmers, Foot—

Pike Mfg. Co., Soapstone....40@40&10%

Washboards—

Solid Zinc: ₱ doz.
Crescent, family size, bent frame.$4.05
Red Star, family size, stationary protector $4.05
Double Zinc Surface:
Saginaw Globe, family size, stationary protector $3.55
Cable Cross, family size, stationary protector $3.60
Single Zinc Surface:
Naiad, family size, open back, perforated $3.00
Single Saginaw Globe $2.85
Brass Surface:
Brass King, Single Surface, open back $4.05
Nickel Plate Surface:
No. 1001 Nickel Plate, Single Surface $3.60
Glass Surface:
Glass King, Single Surface, open back $3.95
Enamel Surface:
Enamel King, Single Surface, ventilated back $3.95

Washers—Leather, Axle—

Solid .....90@90&10%
Patent .....90@90&5%
Coil: ⅜ 1 1⅛ 1¼ Inch.
9¢. 10¢. 11¢. 14¢. per box

Iron or Steel—

Size bolt.... 5-16 ⅜ ½ ⅝ ¾
Washers....$5.50 4.50 3.20 3.00 2.80
The above prices are based on $6.00 off list.
In lots less than one keg add ½¢ per lb.; 5-lb. boxes add ½¢ to list.

Cast Washers—

Over ½ inch, barrel lots..... per lb. 1¼@2¢

Wedges—

Oil Finish.....lb., ..@3¢

Weights—Hitching—

Covert Mfg. Co. 30&2%

Sash—

Per ton, f.o.b. factory:
Eastern District...$25.00@$28.00
Southern Territory.....$25.00
Western and Central Districts .....$24.00@$27.50

Wheels, Well—

8-in., $2.22; 10-in., $2.82; 12-in., $3.36; 14-in., $4.80.

Wire and Wire Goods—

Bright and Annealed:
6 to 9.....72&10&7½%
10 to 18.....72½&10&10%
19 to 26.....75&10&10&2½%
27 to 36.....77½&7½%
Galvanized:
6 to 9.....72½&10%
10 to 14.....72½&10&5%
15 to 16.....72½&10&5%
17 to 18.....72½%
19 to 26.....70&5&2½%
27 to 36.....65&10&10%
Coppered:
6 to 9.....65&10&10%
10 to 14.....70&10&5%
15 to 18.....65&10&10&10%
19 to 26.....70&5&2½%
27 to 36.....72½&10&2½%
Tinned:
6 to 18.....67&10&10%
Brass .....17¼¢ lb., base
Copper .....32¢ lb., base
Cast Steel Wire.....50%

Spooled Wire—

Annealed and Tinned..70&10&10%
Brass and Copper.....60&10&10%
Retailers' Assortments, per box, $2.10@$2.40

Wire Clothes Line, see Lines.
Wire Picture Cord, see Cord.

Bright Wire Goods—

Steel Wire Goods.....90&25%
Brass Wire Goods....90@90&10%
Brass Cup and Shoulder Hooks, 80&15%

Wire Cloth and Netting—

Galvanized Poultry Netting, 80&2½@80&7½%
Painted Screen Cloth, 100 ft., $1.35
Standard Galv. Hardware Grade: Per 100 sq. ft.
Nos. 2, 2½ & 3 Mesh.....$2.75
Nos. 4 and 5 Mesh.....$3.00
No. 6 Mesh.....$3.25
No. 8 Mesh.....$3.75

Wire, Barb—See *Trade Report*

Wrenches—

Agricultural .....75@75&10%
Alligator or Crocodile..70&10@75%
Baxter Pattern S Wrenches... 70&5@70&10%
Drop Forged S.....45@45&5%
Acme 60&10%
Alligator Pattern, 70%; Bull Dog..70%
Bemis & Call's:
Adjustable S, 40%; Adjustable S Pipe, 40%; Briggs Pattern, 40%; Combination Bright, 40%.
Steel Handle Nut 50%
Combination Black 40&5%
Merrick Pattern 50%
Boardman's 40%
Coes' Genuine Knife Hdl..40&10&5&5%
Coes' Genuine Steel Hdl..40&10&5&5%
Coes' Genuine Key Model..40&10&5&5%
Coes', Genuine Hammer Handle..... 40&10&5&5%
Coes' "Mechanics'"...40&10&10&5&5%
Donohue's Engineer 40&10%
Eagle 70%
Gem Pocket 50%
Hercules 70%
W. & B. Machinist:
Case lots 50&5%
Less than case lots 50%
W. & B. Railroad Special:
Case lots 50%
Less than case lots 40&10&5%
Solid Handles, P., S. & W., 50&10%; full cases 50&10&5%
Stillson 65%
Uwanta Wrench Co.:
Railroad Special, Iron Handle, 40&10&5%
Other Wrenches 50%
Vulcan and Agrippa Chain 50%
Whitaker Machinists':
Case lots 50&10%
Less than case lots 50%

Wrought Goods—

Staples, Hooks, &c., list March 17, '92 .....85&10&10%

Zinc—(*Cask lots at mill.*)

Sheet.....per 100 lb., $7.00

For the Table of "Current Metal Prices" see the First Issue of Every Month.